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The next annual meeting of the Massachusetts Medical Society will be held in Boston, Monday, Tuesday and Wednesday, June 8, 9 and 10, 1931.

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The Massachusetts Medical Society

SECTION OF RADIOLOGY AND PHYSIOTHERAPY

WEDNESDAY AFTERNOON, JUNE 18, 1930

THE Section of Radiology and Physiotherapy of the Massachusetts Medical Society convened in the Armory, Plymouth, at two-forty o'clock, Dr. P. F. Butler, Chairman of the Section, presiding.

CHAIRMAN BUTLER: The meeting will please come to order.

There is only one matter of official business before the Section and that is to appoint a Nominating Committee to retire and bring in a list of officers for the Section for the coming year. I appoint on that Committee Dr. Jennings of Fitchburg, Dr. Meehan of Lowell, and Dr. McFee of Boston.

We will now proceed to the Scientific Program. The first paper on the program is that of Dr. Isaac Gerber, of Providence, who will discuss "Radiation Treatment of the Thyroid."

RADIATION TREATMENT OF TOXIC GOITER*

BY ISAAC GERBER, M.D.†

I AM especially interested in presenting this subject before the Massachusetts Medical Society since many of the early advances in radiation treatment of this disease were made in the vicinity of Boston. The earlier literature is filled with work by Seymour, Holmes, Means, Aub, Richardson, etc., and it is only within the past few years that a somewhat different point of view has prevailed and the importance of surgery in this field has been stressed.

In looking back over the history of this subject it is interesting to find that the very first publication on the relation of x-rays to thyroid surgery came from the Mayo Clinic in 1904. At that time a certain amount of radiation of the thyroid was done before surgery was attempted, on the hypothesis that a preliminary sclerosis of the lymphatic vessels would take place which would make the then existing surgical procedure somewhat easier. Also it was thought that perhaps less extensive surgery might be necessary. Of course we know today that whatever good might have been produced by this preliminary x-ray treatment certainly had no relation to the hypothesis that was put forth at the time.

In the earlier years of the present century the matter of radiation treatment in toxic goiter presented quite a different aspect from what it does today. Much of the thyroid surgery which was done was incomplete, and inefficient. Many disasters and surgical complications took place, and many times the disease recurred. In the past few years the entire field of surgery of the thyroid has been radically changed. The operative technique has been improved; subtotal thyroidectomy in one or two stages being used instead of the ligations and the incomplete operations of previous years. The preliminary preparation of the patient by means of Lugol's solution, after the method of Plummer, has completely changed the matter of safety in operation. Improvements in anaesthesia, especially the use of local anaesthetics and the use of ethylene gas, have also helped to place an entirely different aspect on the safety of surgical operations. So today when I stand and discuss the matter of the relation of radiation treatment to toxic goiter, I am discussing this problem at a stage that is radically different from that which existed even so recently as ten years ago. In fact, the improvement in surgical methods has developed so fast that many of our surgeons have forgotten that such a thing as radiation treatment exists. In this community particularly, where large thyroid clinics have developed, where the finest type of thyroid surgery is being practised, the radiologist has been relegated to a position even worse than that of the poor relation. Not only is he not wanted but his lack of welcome is made very plain and unmistakable. In some institutions where very valuable pioneer work was done in developing the indications and technique of radiation treatment the method has been almost entirely abandoned. My excuse for presenting this paper is that I firmly believe that in spite of the tremendous advances that have been made in the past decade in the surgery of toxic goiter, there is still a very definite and legitimate place for radiation treatment which I do not believe should be neglected or disparaged.

I wish to make it clear that when I speak

*Read before the Section of Radiology and Physiotherapy at the Annual Meeting of the Massachusetts Medical Society at Plymouth, June 18, 1930.

†Gerber—Consulting Roentgenologist to Rhode Island Hospital. For record and address of author see "This Week's Issue", page 129.

about toxic goiter, I refer to two definite diseases, exophthalmic goiter and toxic adenoma. Radiation treatment has no legitimate place in the other degenerative types of thyroid disease except in malignant disease, which is definitely outside the scope of this discussion. The purely cystic or colloid types of disease without toxicity should be handled by the surgeon according to the particular indications which he finds. However, in thyroid diseases that are attended by definite toxemia, radiation has a distinct and valuable application.

Let us consider for a moment the action of radiation with respect to this disease. The action is essentially the same, whether we use radium or x-rays. There is probably no doubt today that the symptoms in toxic goiter, for which relief is sought, are produced by definite hypersecretion of the glandular elements of the thyroid. We know from numerous experiments that have been made on both animals and human beings that x-rays and radium have a very definite influence on these hypersecreting thyroid tissues. In normal thyroids it is probable that moderate and even fairly heavy doses of rays have little or no effect. Many animal experiments have proved this, and in the thousands of cases all over the world where various types of diseases around the neck have been treated by radiation, we do not see any effect on thyroid secretion when the thyroid gland is normal. On the other hand when we have hypersecreting tissues we are dealing with cellular elements which are particularly sensitive to radiation. With slight radiation there is a retardation in cellular function, and this extends definitely to a complete cessation with eventual atrophy of the secreting elements if enough radiation is applied. The amount of cellular destruction that is produced is in direct proportion to the amount of rays applied.

It will be readily seen that with x-ray treatment the end result is not essentially different from the goal at which the surgeon aims. In the earlier operations the surgeon eliminated a small amount of hypersecreting thyroid tissue by ligating one or more arteries. Later the actual groups of hypersecreting tissues were resected. Gradually the operation was improved until surgeons learned how to remove enough of the overactive tissue to dispense with the toxemia of hypersecretion, and at the same time to avoid the dangers of too complete removal with its sequel of operative myxedema or perhaps the complications ensuing from the removal of the parathyroids.

With radiation, under favorable conditions, we can accomplish exactly the same thing. With a proper dose the overactive secreting elements can be retarded and destroyed. Atrophy and connective tissue replacement develops and eventually we have a condition which essentially parallels the state that exists after the surgeon's work.

I do not wish to go very intimately into the problems of technique at this time. I am more concerned here with the problem of the justification of radiation as opposed to the constantly repeated objections of surgeons which in many instances have little or no foundation. I will say in passing, however, that personally I prefer the rays which are produced by the x-ray machines of high voltage and accompanied by heavy filtration, for several reasons. In the first place we can concentrate a more efficient amount of rays in the depths of the thyroid with less effect upon the overlying skin when heavily filtered rays are used. In the second place most of the machines which are equipped for heavily filtered treatments are so constructed that the patient is able to lie much more comfortably and freely. The beam of x-rays is usually closely confined so that it is not necessary to cover the patient with so much heavy lead protecting material. Also the various parts of the apparatus are grounded, so that the danger of electric shock is eliminated. With the older types of low-voltage apparatus no one was permitted near the patient on account of electrical dangers as well as the exposure to x-rays. Consequently the degree of strain was much greater than when a relative or friend could stay with him through the treatment. It is always more satisfactory when a patient, who is already laboring under a tremendous nervous strain, does not have an added strain placed on him by the treatment itself. I feel that this psychic aspect of the treatment is extremely important because with radiation treatment as with other types of medical treatment it is necessary to remove strains of all sorts, physical or mental. It is likewise desirable that with radiation all other correlative medical treatment should be applied.

I have spoken up to now of x-rays only but in many places the gamma rays of radium are also used with equal effect. As a rule, the biological effects in this disease are the same, whether radium or short wave-length x-rays are used. Generally the x-ray treatment is to be preferred because it is much shorter in duration, is less tiring to the patient, and is much more economical. On the other hand, under circumstances where every particle of mental strain is to be avoided, radium can be used very satisfactorily because it can be applied without any knowledge on the part of the patient. The applicator can be made up so as to resemble any type of neck application such as an icebag, etc.

Large doses of rays are not at all necessary in this condition. I can recall a very lively discussion which took place in 1919 at the Saratoga meeting of the American Roentgen Ray Society. At that time, even in many of the large clinics where x-ray treatment was being utilized, enormous doses similar to those employed in malig-

nant disease were being applied to this condition, of course very often with unfortunate results. In that discussion it was brought out very emphatically that we were dealing with a condition not like malignant disease in which heroic methods were to be applied, but with a chronic disease where we were attempting to break part of a vicious circle of endocrine disturbance. Consequently we certainly had no business leaving the patient with results that were as bad as the original disease or worse. With the high voltage apparatus, doses corresponding to approximately 20% of an erythema skin dose are all that is necessary to apply at any one time.

Not only is the thyroid itself treated but it has been found desirable to administer part of the radiation to the thymic region. You all are aware that many of the cases of exophthalmic goiter that have come to autopsy have been associated with hyperplastic disturbance of the thymus. Under these circumstances radiation of this organ is extremely useful. In fact, in some highly organized surgical clinics, it has been recommended that a preliminary preoperative treatment be applied to the thymic region in order to diminish the risk in the subsequent surgical procedure on the thyroid itself.

Under favorable circumstances the first group of symptoms to disappear when the patient is under radiation treatment is that pertaining to the nervous system. The tremor, tachycardia, excessive sweating and indigestion diminish and eventually disappear within a short period of time. I recall distinctly some of the cases that had marked and distressing diarrhea. Some of the patients had from eight to ten loose stools daily. In a number of instances, after a single course of treatment, when the patients came back two or three weeks later they were having one or two formed stools daily.

The exophthalmos and actual goiter do not disappear so readily. In many cases where there has been a complete cessation of all toxic symptoms, there may still be a sizable struma and a moderate or fairly extensive exophthalmos. However, even in operated cases with thoroughly satisfactory clinical results, many of the patients will be left for years with an exophthalmos which is readily recognized across a room.

The most important element in following the therapeutic efficiency of this treatment is the detailed check-up and control of the basal metabolism. This method is one which has been very thoroughly abused in the past. On the one hand we have seen basal metabolism determinations made by surgeon's assistants who were not especially competent, and on the other hand I have seen many basal metabolism determinations made by radiologists of inefficient training with no conception of the various possible errors and of the various changes that may take place under normal conditions, even at different times of the day. Basal metabolism tests are only of value if done by a person thoroughly trained and grounded in this work. This is a matter which cannot be learned in a few days or even a few weeks. It takes many months of training and it is desirable that all tests on a particular person should be made under the same conditions and by the same person in one laboratory. In the favorable cases treated by radiation a definite diminution in the rate of basal metabolism will be observed, with eventually a normal rate. The manner of reduction varies in different patients but as a rule it is slow, extending over a period of several months.

What I have described to you thus far may appear to be an overdrawn picture of favorable results. Personally I feel quite confident that these favorable results will ensue in a very large proportion of cases if proper limits are set to the groups that the radiologists elect to treat. In the first place I think that it is inadvisable to attempt to treat a patient with a very high basal metabolism of plus 60 to 70% and with general signs of extreme toxemia. In these cases the rapid results obtained by suitable surgery in the hands of experts are more desirable than the slower results which might be obtained by the long continued radiation. These are the cases which up to a few years ago were considered poor surgical risks, but with the present improved methods of surgery and preliminary treatment these risks are no longer so dangerous.

Again radiation should not be employed where the thyroid tumor is extremely large. This applies more particularly to the cases of toxemia that have developed in long standing adenomas than to the true exophthalmic cases. For this group the surgeon can perhaps do more in a shorter period of time without permitting the possible development of unfavorable conditions which I shall describe later.

Finally, radiation should not be used in cases which already show cardiac changes. Lahey and his co-workers in Boston have especially emphasized a type of cardiac disease which generally impresses itself as primary to the physician but in reality is secondary to thyroid disease. The lives of many of these patients have been prolonged by thyroid surgery and in many instances what were thought to be hopeless cardiac complications have actually been cured. Where cardiac disease already exists I will not say that we are wasting time with radiation, but if expert surgery is available, in the absence of other contraindications, it is perhaps better to have the surgeon take the short cut to relief instead of the longer method that exists with radiation and the possibility of the continuation of the toxemia.

As a preliminary to treatment of any sort, either with radiation or surgery, an x-ray examination of the chest is of extreme value. In the first place, cardiac complications may be detected that perhaps have been overlooked on

clinical examination. Complications connected with the aorta are very readily seen. Finally the presence or absence of substernal extension of the thyroid can be determined. The usual substernal thyroid mass is readily seen as a dense shadow displacing the trachea to one side or the other, with sharply defined margins, and a general triangular appearance with the base upwards and the apex extending toward the aortic arch. If the patient is observed during the act of swallowing a slight amount of water, the substernal thyroid will be observed to move upwards as the thyroid cartilage ascends. This gives some information as to the mobility or fixation of the substernal tumor which may be of great value to the surgeon. Pulmonary complications, such as chronic inflammatory disease and multiple bronchiectases, can also be seen.

Most surgeons feel that the appearance of these substernal extensions of the thyroid is an absolute indication for surgery. On the other hand many radiologists, such as Grier of Pittsburgh, have described large groups of such cases in which the substernal extension has diminished or even disappeared under radiation, and in which the toxemia likewise disappeared.

From what I have up to now described you are perhaps wondering what case I feel is legitimate for thyroid radiation. I would say that it is the type of case with a moderate toxemia, not too large a goiter, and without detectable cardiac complications. This is exactly the type of case which many surgeons feel should be operated upon early and in which the hopes of cure are one hundred per cent. I can only reply that this is exactly the type of case in which I feel that the results of radiation properly applied are equally valuable.

At this point it is suitable to say something about the objections of surgeons to thyroid radiation. I say objections of surgeons advisedly, because the objections as we usually hear them come almost invariably from surgeons rather than from other medical men. First of all, the length of time that is consumed in radiation treatment is emphasized. They deplore the fact that the patient is allowed to go on and on with an increasing toxemia until he develops serious complications, particularly in the cardiovascular system as well as in other organs, such as the pancreas and perhaps the ovaries in women. Eventually serious states are produced that make it impossible to apply adequate surgery, and eventually lead the patient to a condition where the surgeons can do nothing more than palliate. Again they object to the production of skin complications resulting from x-ray dermatitis, such as atrophy, pigmentation, telangiectases, etc. They speak of the production of inflammatory adhesions around the capsule of the thyroid which make the operation, which this patient must come to eventually, very much more difficult. In some cases they claim that there is extreme danger from excessive hemorrhages which will be produced. Again the treatment is considered as only temporary and the toxic conditions will recur so that eventually surgery must be resorted to. Finally it is emphasized that there is a serious danger of overdestruction of the thyroid from the constant application of therapeutic rays so that eventually myxedema will be produced which will require constant treatment for the rest of the patient's life.

As for the very long treatment, it is the general consensus of opinion among those qualified that four months in uncomplicated cases is long enough to try out radiation if no definite improvement is obtained. Less time should be consumed if one has a case in which the basal metabolism shows an inclination to go higher in spite of treatment. In such a case no further time should be wasted but the case should promptly be turned over to the surgeon. On the other hand, if one has a case in which all the symptoms are gradually disappearing, in which there is a diminution of exophthalmos and perhaps of the goiter, an improvement of all the symptoms in the digestive tract, the disappearance of the disturbances of menstruation, and if at the same time there is a reduction of the abnormally high basal metabolism which gradually comes down to the normal level, then why are the radiologists to be reproached for dragging a case on indefinitely and depriving that patient of the benefits of later surgery?

If there is a recurrence of symptoms later, it is very easy to apply more radiation, with adequate control of basal metabolism, and produce the desired results. Even with competent surgery, recurrences of toxemia occasionally take place. I was interested only within the past year to read a surgeon's discussion of this problem in which he spoke of having operated five distinct times upon a patient until he finally removed the last remaining nodule of oversecreting tissue. Exactly the same results could have been produced by radiation without all the other complicating difficulties.

As for skin complications, I must grant that in the earlier days of inadequate apparatus, improper filtration, loose methods of dose measurement and very large doses, skin complications did occasionally take place. Today, particularly with the high voltage methods of treatment, smaller doses and more reasonable individual control of the treatment, these complications should not occur and there should be no physical damage to the skin.

The matter of postradiation adhesions is an old myth which has been brought up from time to time for the past twenty-five years. Von Eiselsberg of Vienna is responsible for this story as he had several operative cases following excessive radiation where the adhesions were sufficient to complicate surgical proceedings very materially. Since that time a large amount of investigation has been applied to this problem and it has been found by unprejudiced observ-

ers that perithyroiditis is just as common in non-radiated cases as in those in which radiation has been applied. There is no evidence, experimental or otherwise, to prove that the rays will produce a hyperplasia of connective tissue around the thyroid capsule. The conditions which are observed at some of the operations probably originated largely in an unrecognized inflammatory thyroiditis complicating childhood diseases. The difficulty here is psychological rather than pathological. The thyroid surgeon will pay no attention to slight adhesions that he encounters in the course of the ordinary operation but will break them up with his finger and not even describe them in his notes of the operation. Let him know, however, that the case has been exposed to rays some time prior to his surgery and the presence of even a few absolutely innocuous adhesions will be noted with great care.

Finally the problem of myxedema is certainly an important one. In the cases treated by surgery, myxedema was not an infrequent complication until the subtotal operation was standardized. Likewise, myxedema occurred occasionally in cases treated by radiation before it was known how to control the treatment by constant and accurate checks on the basal metabolism. Today, with a thyroid case in which the basal metabolism is slowly dropping to normal, no danger of myxedema exists. In cases in which the response to radiation is unusually prompt and rapid, it is better not to apply any radiation after the basal metabolism drops to plus ten per cent. With care in the application of the rays, particularly with small doses, the danger of the development of myxedema is, I believe, more theoretical than practical.

As contrasted to these objections, there are distinct advantages in the radiation treatment. The patient does not need as a rule to disrupt his ordinary method of living. Of course the more toxic cases will require rest in bed and other medical methods of treatment but the less toxic cases may, if their economic conditions demand, carry on a certain amount of occupational activity. No hospitalization is necessary with its enormous expense for the patient. No psychic or mental shock takes place, particularly if the radiation is administered in the way I have described. There is no scar, no operative mortality and no complications such as surgical shock, the production of infectious thrombosis or the more infrequent complications of tracheal collapse or damage to the recurrent laryngeal nerve.

In stating what I consider to be the legitimate field for radiation treatment I have already mentioned that this treatment should be restricted to patients without detectable cardiac complications, without abnormally large thyroids and without extreme toxemia. With these groups left out, there is still an enormous number of toxic thyroid cases treated by surgery today which I believe can just as well be handled by radiation with the advantages that I have just enumerated.

The entire problem of the treatment of toxic goiter has gone through an interesting evolution in the past few years not unlike the situation that has taken place with respect to the treatment of peptic ulcer. We have always had medical treatment of ulcer the same as we have had medical treatment of toxic goiter. Then came the perfection in the surgical attack on ulcer, and immediately an overenthusiasm for surgery resulted. The pendulum swung so far that many surgeons were prepared to state that ninety per cent. or more of peptic ulcers demanded surgical intervention. Then the pendulum swung the other way and medical treatment came again into its own. It was shown unmistakably that while surgery has its place in many cases it was not for the overwhelming percentage of cases or even for the majority. Many surgeons even have conceded that the group requiring surgery is probably not more than ten per cent. of all cases. Finally we come to the present condition where investigators in various parts of the country are emphasizing the fact that peptic ulcer is distinctly a chronic disease and that in cases treated either medically or surgically, the results ten years later are not essentially different from those where no treatment of any sort was employed.

In the treatment of toxic goiter a very analogous situation exists. The improvements in surgical technique, anesthesia and preoperative treatment have resulted in an enthusiasm for the surgical method, and an overemphasis upon surgery. The pendulum has swung very decidedly in the direction of the surgeon. I feel that this method has probably reached its peak today and before very long we will see the pendulum swinging back, as it always does. With this reaction we shall see a return to the simpler methods of treatment, especially in the early cases. Among these will be radiation.

Discussion

Dr. Howard M. Clute, Boston: Dr. Gerber's discussion of the radiologic treatment of the thyroid gland has been of great interest to us. We have long been familiar with the fact that by x-ray therapy the toxic manifestations of hyperthyroidism could be controlled and we have naturally had many opportunities to observe patients who have been treated with this method. In many instances these patients have been treated over long periods of time and I feel certain that many physicians are not so conservative in their consideration of the value of x-ray therapy and of the length of time that x-ray therapy should be continued as is Dr. Gerber.

As surgeons dealing with hyperthyroidism, we frequently would welcome the aid which x-ray therapy should render if it is to be val-

uable in controlling this condition. We have tried x-ray treatment in extremely toxic goitres —those patients whom Dr. Gerber would not by preference subject to x-ray treatment. Yet these patients are the ones whom x-ray therapy would greatly benefit. They are patients who are extremely ill, who have been through all the preliminary, temporizing, conservative measures; who have taken Lugol's Solution for a long time and in spite of all these things have failed to improve to a degree in which surgery can be safely undertaken. Here we have hoped that x-ray therapy might reduce the toxicity and make the surgical risk more reasonable but in our experience this has not been accomplished. We have tried x-ray therapy in hyperthyroidism in children because we are not particularly familiar with this condition since there are not a large number of cases from which to learn the degree of surgery which a child can stand and because with our experience we have felt that operation in children is dangerous. We have hoped that x-ray would reduce the activity of the thyroid in these children and we have continued x-ray therapy even over a period of many months in certain instances, yet it has thus far failed to be of benefit. We have tried x-ray therapy in patients on whom we had previously operated for hyperthyroidism and in whom we had not obtained a cure,—patients who were suffering from recurrent or persistent hyperthyroidism. Here one would expect that in a gland already partly removed by surgery, x-ray would have an excellent opportunity to produce a diminution of thyroid function and yet these patients, in our experience, have not been improved by x-ray therapy.

Our experience has thus far seemed to show that when x-ray therapy improves hyperthyroidism it is after such a long period of time that we hesitate to wait for its possible effects. Patients with severe hyperthyroidism may have a crisis in which the illness rapidly becomes extremely severe or may even result fatally. One cannot risk the occurrence of such a crisis while waiting to see whether a patient is susceptible to x-ray treatment. The mortality of exophthalmic goitre in all patients operated upon in our Clinic in the past five years has been .65%. The period of disability following thyroidectomy for exophthalmic goiter is now reduced to a matter of a very few weeks. In view of a mortality rate which is so low, a method of therapy which is so rapid in its effect and so satisfactory in its end result, we feel that surgery is superior to any other method yet devised for the treatment of hyperthyroidism.

The particular phase of x-ray therapy of the thyroid which I had anticipated that Dr. Gerber would particularly emphasize, he has not discussed this afternoon. I am referring particularly to the x-ray treatment of thyroid malignancy, for here, in our experience, x-ray is a most remarkable agent upon which we depend a great deal. We have been astonished repeatedly to see patients in whom an extensive thyroid malignancy was found which was completely inoperable to have it completely disappear under the influence of x-ray therapy alone and we have followed these patients for varying periods of time up to three or four years and found that they failed to have a local recurrence of the growth.

It is my feeling, from our experience with thyroid disease, that at present surgery is so safe, so rapid and so certain in the really severe and definite cases of hyperthyroidism that it is the therapeutic measure which should be given precedence. In thyroid malignancy, however, we believe that x-ray and surgery combined are the measures which are most desirable.

Dr. Benjamin T. Loring, Watertown: A certain number of cases of adenoma of the thyroid, if not removed when first seen, become malignant.

These cases, if operated on early, are completely cured. A patient is deprived of that chance of complete cure when the operation is delayed until malignancy develops.

Dr. Isaac Gerber: I have very little further to say. The matter of malignancy was omitted intentionally because that is a whole chapter in itself. The development of malignancy on adenoma really has no place in this particular discussion. I am concerned not with the ordinary adenoma which develops malignancy but with the toxic adenoma which comes for treatment of the toxic symptoms.

In the paper which will eventually be published I went more into the details of treatment. It is perfectly true that in years past serious errors have been committed by some radiologists in the handling of cases, especially in prolonging treatment and preventing patients from coming to adequate surgical treatment, but I feel that those days are over.

If the indications that I mentioned are strictly adhered to, you have left a group of cases in which it is very simple to determine within a relatively short time whether the radiation will accomplish anything; by that I mean a maximum of four months. With a patient without an extreme degree of toxemia there are no longer complications. If there is a rising metabolism I would be the first to advise resorting to operation at once.

There are, undoubtedly, thousands of cases all over the country within the group I have described in which radiation has a legitimate field of application. If this is applied sensibly and with judgment, I feel confident that the necessity for surgery can be cut down very appreciably in the future.

Chairman Butler: The next paper is "Physiotherapy as Applied to Orthopedic Practice," by Dr. Harold D. Corbusier of Plainfield, New Jersey.

MOTION PICTURES DEMONSTRATING THE APPLICATION OF PHYSICAL THERAPY TO CERTAIN ORTHOPAEDIC CASES*

BY HAROLD D. CORBUSIER, M.D.†

THESE reels will attempt to demonstrate the important part which physical therapy holds as an adjunct to surgery, in certain types of cases. The term "physical therapy" will be used in its broadest sense. Both the general and the orthopaedic surgeon are dependent upon many forms of physical treatment as adjuncts to surgery; certain disabilities such as the usual case of so-called "flatfoot", being treated almost entirely by physical therapy.

It is unfortunate that there are still a good many surgeons who disregard the benefit of physical measures, either because they do not take the trouble to investigate their value, or because their experience has been limited to cases in which improper technic was used.

In a report by the Committee on Traumatic Surgery, of the American College of Surgeons, 1926, the following appeared: "This Committee reports that after a careful review of our statistical data, the opinion is justified that the application of physical measures as now practiced generally does not warrant our approval, nor does it indicate that sufficient benefits are derived to justify its application indiscriminately and when used it should be early and for a limited time; therefore, it is our belief that this form of treatment is only applicable to a very selected group of cases and when used must be used only by qualified, experienced operators in this form of treatment."

I understand that this view was based on a report of the "field surgeon" who had seen fifteen cases in which some form of physical therapy was utilized.

In the same report there is an opinion of a man of a good deal of expérience, that is, he is quite well known in the field of accident insurance. He states as follows: In the large majority of cases physiotherapy as now rendered is of little value. If the insurance carrier were to choose as to whether physiotherapy should be given or eliminated, it seems to be the opinion that the carrier, employer, and employee, would all be better off without any physiotherapy. One can only imagine that this man's experience was either very limited. or that his observations were based on very unfortunate experiences.

You will note in this reel the treatment of so-called, "flatfoot", or better, weak foot. Physical therapy is the basis of this treatment, and in my opinion better results can be obtained by these means than by the use of metal "foot plates". It is essential to obtain the full coöperation of the patient as you can see as the pictures are shown. The first step is a careful and detailed examination, of not only the feet, but the patient's posture and method of walking. You will note the method of taking foot impressions and marking on the chart all the abnormalities found; this is in addition to the notes made on the history card. The next step is to place the patient in this leg whirlpool bath at 110°F., or in the foot bath containing epsom salts. This is followed by a thorough massage of legs and feet, directing the patient in the proper method of exercise without weight bearing. Many of these cases have tenderness in both the longitudinal and the metatarsal regions.

The claw toe is a common disability, especially in women. This must be corrected as far as possible by stretching of the extensors, and by active exercises. Women often have a shortened tendo Achillis, or rather a shortened gastrocnemius; this must be overcome. Also, edema of the leg is a common symptom. Note the careful massaging, always preceded by heat. You will see that the movements are directed to inversion and supination and dorsal flexion. The treatment of weak foot is too often considered a foot condition only. This is not the case, and this treatment will fail unless we attend to the entire leg, the posture and the method of walking. A metal plate will not accomplish what is required. Note here the method of preparing and applying the felt pad, which is not used to push the arch upward, but to guide the foot in inversion and supination as far as possible. The straps are applied in this manner, pulling the foot over on its outer edge. The strips are applied over a bandage and no higher than about four inches above the malleoli. The old method of using long straps up as far as the knee is not necessary. Now the strapping is finished. Of course, the shoes are wedged on the inner side of the heel, and sometimes the toe. This anterior cleat is used in some metatarsal cases, but is not often required. This shows a "foot girdle", which we apply in order to continue the guiding of the foot, after the strapping is discontinued. Naturally, a properly shaped shoe is prescribed for each case, the particular last being selected to suit the case. The picture shows a shoe built along the proper lines. One must never send a patient to the shoe store with instructions to buy a "good shoe"—that is not sufficient as the salesman does not know what that particular case needs, and there is no one shoe which is suitable to all cases. One must

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†Corbusier—Attending Specialist in Orthopaedic Surgery, U. S. Public Health Service, and Veterans' Bureau. For record and address of author see "This Week's Issue", page 129.

be very specific in this matter. High shoes are seldom necessary.

Note the exercises. You have undoubtedly seen most of them before. It is a matter of getting them done properly, both at home and in the office. They are simple, and do not require much time, but must be modified to suit the case. Note the outward roll of the knees. I devised this one a number of years ago, and find it of much value. This block you see has been used for a good many years, and is of value from several standpoints. There are notches in the point over which the toes go, and the block is in the shape of a roof so as to make the person supinate a little bit, and it is lower in the back than in front, in order to stretch out the heel tendon. These exercises must be done very slowly and deliberately. They can be taught to very young children. Some children have a combination of knock knees and pronated feet. If the knee condition is not sufficiently serious to require an operation, then corrective exercises are of much value and may eliminate the necessity of using braces. It is sometimes necessary to do an arthrodesis on the inner side of the foot in the extreme pronated cases, and this picture shows such a case. Note the improvement in the shape of the foot, and the ability to walk with ease. This case had the tendo Achillis lengthened, also.

In addition to the treatment described, we often use diathermy through the foot and leg as shown here—a foot plate being applied to the sole and a cuff higher up. Relief from pain can be obtained in this manner in some cases. Also, the positive pole of a galvanic current is useful, applied to the points of tenderness, in the longitudinal or the metatarsal areas.

This picture shows a fracture dislocation of an elbow, a difficult thing to treat and obtain full motion. This massage, under water, in a whirlpool bath at 110°F. is begun in about a week after injury. One must have a very well-trained technician for the work and the x-ray must be carefully explained to her. Even after open operation early motion should be begun, but always in this manner, under hot water, in order to cause relaxation and stimulate circulation. The arm must rest on a towel and no attempt made to move the joint until perfect relaxation of muscles has taken place. The same technic can be used for the wrist, hand, foot, ankle, and knee joints, even for the hip, if one has a whirlpool, or tank, for the purpose.

This picture shows a fracture dislocation of the head of the humerus which caused a complete paralysis of the entire arm. Physical methods in this case brought about the good result seen, with almost perfect function at the shoulder and in the entire arm and hand. The patient was put up in an airplane splint, after reduction. Heat and frequent massage, with the addition of galvanic and sinusoidal currents were of great assistance. You will see that there is very little atrophy.

This picture shows a hand which was rendered useless by infantile paralysis. After muscle training and the use of the sinusoidal current, this brace was applied, which as you see makes it possible for this girl to use a typewriter. She has become so efficient that she is now earning a living.

This case is one of marked enteroptosis, which rendered the patient, a woman of thirty-five, quite useless to herself and others. She also had a moderate scoliosis. You can see the result of a year's training in corrective exercises. She gained twenty pounds, and is now in excellent health, and able to carry on quite normally.

This picture shows the construction and method of using a new whirlpool bath. It is designed to take in the hips as well as the thighs and legs. The bicycle seat is used when it is not necessary to immerse the hips. When they are to be treated the patient steps lower down, and sits on the seat suspended inside the tank. The steps on the outside can be placed on either side of the tank, and a patient with a knee fixed in extension can mount the steps and get into the tank without difficulty. The whole affair is made of monel metal.

Discussion

Dr. W. D. McFee, Boston: The application of physical therapy measures to orthopedic conditions is based to a considerable extent on the value of mechanics and heat. Unfortunately Dr. Corbusier was so limited for time that he was able to present very little concerning these measures of treatment for our discussion, but what he has presented certainly demonstrated the value of physical therapy in orthopedics.

Those of us who have had contact with medicine and surgery for a period of a quarter of a century can recall the time when even strains in and around joints were treated by fixation splints and kept in casts sometimes for four to six weeks with the result that when the splints were removed the patient was unable to use any of the neighboring joints.

One of the advances which has come about through the employment of physical therapy is the now very common practice of the orthopedic surgeon to refer his cases of sprain and fracture within a few days of the injury to some physician familiar with physical therapy for treatment, with the result that there is a quicker and better restoration of function.

The mechanical effects of physical therapy can be accomplished by massage and exercise as Dr. Corbusier has said, but much more can be done in many of these cases by the additional use of interrupted galvanism or the sinusoidal current. Many of these patients come to us with the muscles atrophied or with some nerve impingement resulting in paralysis and it is in these conditions that much can be accomplished in rehabilitation of muscles and nerves by the

proper use of interrupted galvanism and skillful massage.

The use of diathermy is now our main dependence in the treatment of conditions wherein we want the effect of deep heat and there is no other method whereby we may heat the tissues through and through with absolute control and at any degree of temperature we may want. Diathermy stimulates a better circulation and has a most favorable effect in softening indurations.

To get the best result from these measures of treatment the physician must have such knowledge as will enable him to prescribe definitely the procedure to be followed in each individual case.

The value of physical therapy in orthopedics is shown in many cases of arthritis and particularly in postoperative conditions of joints. The question is sometimes asked: Can we use any treatment which will reduce the hypertrophied bone? We cannot, but we are enabled in practically all of them to get worthwhile symptomatic improvement. We can relieve pain, lessen the tension, and through improvement of circulation supply nourishment to the tissues.

I hope that Dr. Corbusier in closing will give us some idea from his standpoint as an orthopedic surgeon of the usefulness of electrotherapy in his work.

There is one other thing that should be mentioned which is the need for the use of general tonic measures in many of these conditions, particularly in the treatment of children who have tuberculous tendencies and in this connection we get our best help from the employment of ultraviolet radiation. A visit to the clinic of Dr. Rollier in Switzerland is most convincing as demonstrating the progress which has been made in the treatment of many orthopedic conditions by ultra-violet radiation resulting in a degree of improvement otherwise considered impossible.

Dr. L. B. Hayden, Plymouth: I had to step out so I didn't hear all of the paper, but I should like to say a word about it, in regard to the flatfoot, weak foot, or whatever they choose to call it, and Dr. Corbusier's custom of throwing away the metal plates.

For a good many years I have fought against the metal plates which are used for that type and I have thought it was all wrong except in very extreme cases. During the past year I have been examining about 2500 school children. I have not the exact figures but about 10 per cent. have trouble with their feet. We mark them 1, 2, and 3, according to the degree. Most of them are 1, there are a good many 2's, which would be second degree flatfoot, and the third degree is rare.

Almost all of them under exercises (which is physiotherapy, of course) and contrasted baths, hot and cold alternately, and most of them without the baths, if we can get them to follow the exercises, show at the end of another year a marked improvement.

These, I think, are the cases that later on in life have foot trouble to a marked degree if they are not properly treated, and I think the proper time is to take them when they are young and in the school age and then much can be done with exercises and teaching them how to walk properly, if they will only persist.

Dr. Corbusier: Dr. McFee spoke about the use of electrical currents in our work. As I indicated, we feel that we cannot do orthopedics in general, without the use of electricity as well as the use of mechanical means, and hydrotherapy.

In certain cases we always use the interrupted current and often for pain we use the positive pole also, but for exercise the interrupted current I consider is quite essential.

Arthritis is very dependent upon physiotherapy technic, and diathermy is very essential in these joint cases in order to cause absorption and relieve pain. Of course, you cannot change the bony deposits, but there is always a great deal you can do in the absorption of exudates and in limbering up a joint and making the patient more comfortable. The question of arthritis is an important one, and many other things have to be done. We often use the direct current in arthritis, particularly for pain developing in the musculature due to joint conditions.

Of course, rickets and similar conditions should always have ultraviolet light, and we take particular pains to use that. We use ultraviolet in all such cases. Many cases are simple anemia, and youngsters who are not strong muscularly have flabby muscles and loose ligaments, so we use the ultraviolet, applying it up until we get a good-looking tan. We note the fact that in so many cases in which one uses ultraviolet, he obtains the same sort of improvement that Rollier does, for instance, in his sun clinics in the Alps. He exposes the youngsters to constant sunshine, and provides an abundance of food and rest, and it is quite remarkable to see the improvement in the musculature. I think you can get the same thing with ultraviolet; that is, if you apply it long enough and the parents are willing to submit to sufficient treatment.

In connection with that, however, we also use the carbon lamp. We consider that a very important thing in a great many different ways, but one way in which we use it, is for a lot of the unhealed cases, postoperative cases that have not healed well, where there are excessive granulations, or there may be cases of old osteomyelitis which have not healed. We find the carbon lamp excellent for such cases; however, the exact technic that we use is to "shoot" them with the ultraviolet first, giving it every other day, de-

pending on what they can stand, concentrated on the ulcer and also general radiation. After a couple of weeks' treatment of the ultraviolet, we switch to the carbon lamp for the localized administration, and I have found so far that these old ulcerous conditions will heal up a lot better with that combination. It is interesting to me and I should like to know whether anyone else has had the same experience.

We have been trying diathermy in fractures. It is said that if you shoot diathermy through a recent fracture, you will get a more rapid deposit of bony tissue. I think you do. How much improvement you get, I do not know. I am not prepared to say. I do not know that enough work has been done on it, but I do feel that in special cases like old, repeated fractures of children, if you use ultraviolet, and diathermy directly through the fracture, you will get a better result and better healing.

Diathermy, of course, is really essential also, in cases of limitation of motion of joints, and in the limitation of motion, for instance, after fractures. One of our greatest bugbears is to get rid of limited motion in joints after fracture and after postoperative work on bones. To my mind that condition is not regulated carefully enough. For instance, if you operate on a femur and put it up in a cast, especially if it is a circular one, you will get as sure as can be joint changes in your knee and have a stiff knee, which, when the patient gets up, might cause as much disability as the other condition did; therefore, we take particular pains to open our casts and leave on as little splinting as possible in order to get diathermy through the joints in the vicinity. I wish to point out the fact that diathermy should be used also on the muscles and not confined to the stiff joint. One finds that this method will prevent fibrosis of the muscular tissue.

CHAIRMAN BUTLER: The next paper is by Dr. A. S. Macmillan, of Waban, on "Diseases of the Esophagus." Dr. Macmillan!

DISEASES OF THE ESOPHAGUS*

BY A. S. MACMILLAN, M.D.†

CAUSES OF DYSPHAGIA

IN the last seven years, 921 patients have been referred to the X-Ray Department of the Massachusetts Eye and Ear Infirmary for radiographic study of the upper digestive tract to determine the cause of difficulty in swallowing.

Dysphagia is a symptom of no imaginary origin and, aside from those complaining of injury from swallowing a foreign body, a surprisingly large percentage of patients showed a definite lesion to account for their symptoms.

This series includes all patients suffering with dysphagia entering the Out-Patient Department of the Massachusetts General Hospital and represents a cross section of esophageal diseases. This is in contrast to the series of cases reported from tuberculosis clinics, reference clinics for adults, children's hospitals, special throat hospitals and the like.

All cases were examined in conjunction with the laryngological surgeons.

THE METHOD OF X-RAY EXAMINATION USED

It is possible by use of the x-ray and a heavy barium paste to localize the lesion, visualize the pattern of the obstruction (a most important diagnostic feature), and observe and study the actual function of the esophagus itself.

The barium paste used in the esophagus clinic is made as follows: half a glass of barium sulphate is mixed with water to form a thick paste and to this is added one teaspoonful of gum arabic; stirring this in will change the paste back into a fluid, thus making it possible to add much more barium before the mixture again becomes a thick paste. The mixture may be made more palatable by the addition of a flavoring extract. This paste, when fed to the patient with a teaspoon, travels through the esophagus slowly enough to be followed with the vertical fluoroscope. If this thick mixture is not used, the right oblique prone position described by Manges,[1] or the lateral horizontal position employed by other radiologists should be used.

Films should always be taken of the lesion when it is localized, to verify the fluoroscopic examination and obtain added detail. These should be taken either in the vertical or prone position, depending on the type and site of the lesion.

The use of the barium-filled capsule, the barium gelatine bougie and the barium-filled sausage skin do not add anything in the way of diagnostic aid that cannot be obtained by the use of this thick paste.

The ability of a careful radiographic examination to demonstrate the presence or absence of an opaque or non-opaque foreign body in the esophagus has been confirmed repeatedly by the subsequent use of the esophagoscope. With the history of possible ingestion of a foreign body a film should first be taken in the lateral position, which invariably reveals the presence of the foreign body. Chicken bones and fish bones are usually dense enough to show in contrast to the soft tissues of the neck. If the foreign body is not of sufficient density to be seen, there will be

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†Macmillan—Roentgenologist, Mass. Eye and Ear Infirmary. For record and address of author see "This Week's Issue", page 129.

a swelling of the tissues of the upper end of the esophagus, indicating a reaction set up by the foreign body.

Normally, by x-ray, the width of the esophagus and its surrounding tissues is about half the width of the trachea. With the foreign body swelling the esophageal shadow is much wider.

Following the taking of the film, the patient should be given barium paste to swallow, which invariably adheres to the foreign body and serves to verify the first examination. If there is no foreign body present, but a scratch of the mucosa from the passage of some object, the barium paste will not adhere to this abrasion after the patient has swallowed water.

The accuracy of an x-ray examination together with its absolute safety of procedure, makes this method the one of choice above all others.

SITE OF LESION

The frequency of the lesions and the site of their occurrence, in a statistical study of the 654 positive cases, is at variance with statistics compiled by other observers. One of the most striking observations is the location of over half of the lesions in the upper third of the esophagus, about two-tenths in the middle third and three-tenths in the lower third.

FIGURE II. This shows the importance of examining the hasopharynx. This coin was lodged behind the soft palate for a week before removal.

FIGURE I

SHOWING THE OCCURRENCE OF ESOPHAGEAL LESIONS AT THE VARIOUS LEVELS

	Cancer	F. Body	Non-cancer	Extrinsic	Burns	Paralysis	Pouch	%
Upper third	82	103	108	18	8	18	14	54%
Middle third	78	5	9	3	15	0	3	18%
Lower third	79	9	94	0	8	0	1	28%

FOREIGN BODIES

Three hundred and eighty-four cases were examined because of a history of possible ingestion of a foreign body. Two hundred and sixty-seven of these cases were negative and the remaining 117 cases showed the presence of a foreign body.

Objects encountered in these examinations, in order of their frequency, were chicken bones, fish bones, open safety pins, a variety of small lead toys which come as prizes for children, and pieces of wood or glass.

One interesting fact connected with the ingestion of foreign bodies is the method of treatment resorted to by the patient. There is a prevailing lay idea that a foreign body can be pushed along through the esophagus by the swallowing of dried bread or crackers. This seldom works and only adds to the traumatization of the mucous membrane of the throat and esophagus. Patients having a foreign body, should be instructed not to eat any solid food. Water does no harm and may wash it down but if the foreign body persists, the patient should always be referred for esophagoscopic removal.

Unfortunately for the patient, there is a tendency among some physicians to pass a bougie or bristle probe, with the intention of dislodging the foreign body. The result, too often, is a perforation of the esophagus by the foreign body or the instrument and not infrequently, a false passage through the mediastinum into the abdomen, with a rapidly fatal mediastinitis. The diagnosis of perforation of the esophagus, pyriform sinuses or pharynx, following such trauma is shown on x-ray examination by marked increase in soft tissue swelling with air or gas in the periesophageal spaces.

A number of perforations due to safety pins were noted. One child of 4 years showed a perforation of the esophagus with a collection of air which separated the thymus shadow from the heart shadow. It was not attended by infection and the open safety pin, after passing through the esophagus and stomach, straddled the pyloric valve in such a way that it was impossible for the pin to pass along. An abdominal operation was necessary for its removal.

Carcinoma: 239 or about 45 per cent. of the 534 cases, showing lesions other than foreign bodies, were malignant. Specimens taken from 154 of these cases were reported by the pathologist as follows:

Epidermoid	124
Adenocarcinoma	17
Carcinoma (type not mentioned)	13
	154

The percentage of incidence of esophageal malignancy does not agree with the findings of Myerson[2] who says carcinoma accounts for 95 to 98 per cent. of lesions of the esophagus in adults.

FIGURE III. Marked periesophageal abscess due to perforation of the esophagus from the blind use of a bougie in an attempt to dislodge a fish bone.

There appears to be no one portion of the esophagus more prone to malignancy than any other. It is quite evenly distributed between the thirds of the esophagus.

Upper third	82
Middle third	78
Lower third	79
	239

Guisez[3] in reporting 1430 cases, found carcinoma most common in the middle third. Males are more prone to carcinoma of the esophagus than females. Zinn[4] reports 70 per cent. to 80 per cent. in males.

The age coincides with carcinoma in other regions. Our peak was at 55 years, the youngest at 32 and the oldest at 80 years.

The history of dysphagia given by these patients is extremely misleading. Pain is supposed to be the first symptom but in the majority of our cases the initial complaint is obstruction, often of short duration, even when the existing lesion, demonstrated by x-ray, must have been of several months' duration. On first examination all of these cases proved to be so extensive that surgical removal was out of the question. An early gastrostomy, in most cases, was advised by the attending physician.

NON-MALIGNANT STRICTURES

A. The next most common group of lesions is the intrinsic non-malignant strictures composed of mucous membrane webs. They comprise approximately 15 per cent. of the positive cases.

These lesions were first described by Mosher[5] and account for a large number of obstructions of the upper end of the esophagus formerly attributed to spasm, globus hystericus and allied neuroses.

These webs, as might be supposed, are not necessarily congenital. They may be caused by any slight ulceration or traumatization of the mucosa and result in either a puckering of the

FIGURE IV. Mucous membrane web at the mouth of the esophagus level of the 5th cervical vertebra—causing marked dysphagia.

mucous membrane with a crescentic diaphragm when healed, or, if more extensive, a web of mucous membrane with a small eccentric opening. Invariably these occur above the level of the episternal notch. Close observation of the bolus as it passes this portion is essential for the detection of webs. These lesions are very apt to be overlooked in esophageal examination, especially when the esophagoscope is introduced with an obturator. The slightest pressure is sufficient to rupture the delicate web and if ruptured, the only remaining evidence of its existence would be so slight that it would be mistaken for a slight tear in the lining membrane due to manipulation of the instrument.

Patients with webs give a history of exacerbation of dysphagia, due no doubt to traumatization of the webs from rough foods. Clinically, the dysphagia is severe. These webs usually occur so high that there is no dilatation of the esophagus above the lesion and so there is no storage space for the swallowed bolus. Food taken in is apt to overflow into the trachea, caus-

ing very severe fits of coughing. The patients are apprehensive and eating becomes a dreaded ordeal. Such a clinical picture is described by Kelley[6] under "Nervous Affections of the Esophagus." He states that on direct examination he finds a small opening, often eccentric, which does not dilate under general anaesthesia but gives way suddenly under dilatation. Following this dilatation the symptoms disappear.

B. Strictures, often extensive, occur. These involve underlying structures, i.e., the submuçosa and muscle layers. They result from trauma, ulcers or ulceration within the esophagus, and cause a stenosis which may involve 2 to 3 centimeters of the esophagus. On x-ray examination these strictures give a filling defect perfectly smooth in contour. On direct examination they present no evidence of ulceration and do not tend to dilate readily, probably due to fibrosis of the periesophageal structures or the replacement of muscle cells with fibrous tissue. This condition is very common in the upper end of the esophagus. When it occurs in the lower end of the esophagus, Mosher[7] describes it as being one of the etiological factors in cardiospasm. He shows, beyond question, that there is a transfer of infection into the wall of the esophagus from infected glands and other periesophageal structures. This condition has not been proven in the upper end, as it has in the lower end, although it seems reasonable to suppose the same etiology to hold in the upper end, due to the proximity of the cervical glands with their frequency of infection.

Smyth[8] describes cases in which such strictures dilate suddenly and completely after instrumentation, which he feels is due to the breaking of periesophageal adhesions.

C. Acute spasm at the entrance of the esophagus was encountered in thirteen patients. The clinical history and roentgen findings are strikingly characteristic.

The etiology of this condition is still undetermined. This type of spasm is not accompanied by upper respiratory infection or any known trauma. Herpes was not noted in any of our series. There is no paralysis of the muscles of deglutition or vocal cords, and it is too localized to be due to central nervous lesion. It seems improbable that a central hemorrhage could be so selective as to involve the musculature of the entrance of the esophagus and not cause a paralysis of any of the adjacent structures.

The patients are usually in the fifth to sixth decade of life and not of the hysterical type.

With no previous history of dysphagia the patient suddenly discovers that he is unable to swallow anything,—even water. The dysphagia is complete for two to three days, when the function gradually returns to normal. Recovery is accelerated by dilatation of the mouth of the esophagus, under ether, at which time no demonstrable lesion can be discovered.

Fluoroscopic examination shows no evidence of paralysis of the muscles of deglutition, but complete obstruction at the entrance of the esophagus. The barium fills the pyriform sinuses and overflows into the trachea, giving a picture characteristic and unlike that found in any other esophageal condition. Guisez described this condition in 1927 and called it esophageal spasm of an acute type. Clinically it resembles labioglossopharyngeal paralysis.

D. Syphilis of the esophagus has always been considered a rare disease. Very few proven cases have been reported in the literature. Guisez[9], in 1924 was able to find a total of 6 or 7 published cases where direct esophagoscopic examination revealed syphilitic lesions. In 3000 esophagoscopies he found only one definite case and one doubtful one and ruled out syphilis in 20 other cases previously diagnosed as specific. In our series we found a number of strictures consistent with healed specific lesions in patients giving a long history of esophageal disturbance and positive Wassermanns but we could not make a positive diagnosis in any one of them.

E. Tuberculosis of the esophagus has been described by several observers. A number of articles have been written from special tuberculosis clinics giving the impression that tuberculous ulceration of the esophagus was not uncommon. In one of our patients there was extensive pulmonary tuberculosis with adhesions involving the mediastinal contents and a definite ulceration of the esophagus at this point. This same patient had a spasm at the lower end of the esophagus, the etiology of which was never satisfactorily explained although it might have been of tuberculous origin. Several of our patients with advanced pulmonary tuberculosis were examined for dysphagia but no esophageal lesion could be found. A laryngeal examination did show, however, a tuberculous infection of the larynx,—a condition which is very painful and prone to cause dysphagia without actual involvement of the esophagus itself.

F. Ulcers: Scattered through the mucous membrane of the esophagus, usually in the lower part, islands of gastric mucosa have been found histologically. These areas are apt to be the seat of ulceration closely resembling the peptic ulcers of the stomach. From the x-ray standpoint these lesions may be suspected where there is associated a marked spasm of the esophagus. The clinical history, suggestive of typical recurrent ulcer attacks, combined with the x-ray findings showing no filling defect, as found in malignancy, should help in making the diagnosis. Not infrequently these ulcers which have been described by Mosher[10], have accounted for so-called cardiospasm.

G. Ulcerations due to scarlet fever and diphtheria have been reported by Oppikofer[11] who found ulceration of the esophagus of 15 per

cent. of a series of 128 scarlet fever postmortem examinations. Killean reported cases of diphtheritic ulcerations of the esophagus.

H. "Cardiospasm" is a blanket term applied to a number of lesions which produce a non-malignant obstruction at the lower end of the esophagus. The condition was first described by Zenker in 1878, by Strümpell in 1881 and by Mikuliez in 1882 who made the first esophagoscopic examination of the affection and attributed it to a spasm of the cardia, originating the term "cardiospasm". In our series "cardiospasm" accounted for less than half of the non-malignant lesions, or 20 per cent. of the diseases of the esophagus. Clinically these patients give a history of esophageal obstruction, sometimes of many years' standing, often starting in the third decade of life. On x-ray examination they show a dilated and elongated esophagus, invariably rotated to the right and twisted at the lower end.

A great many explanations for this condition have been offered. Kelley[12] considers it of nervous origin, causing an interference with Auerbach's plexus. Jackson[13] refers to the pinch cock action of the crura of the diaphragm. Mosher[14] has found the following to be the cause of cardiospasm: ulcer, fibrosis of the musculature of the esophagus from an extension of a low thoracic or high abdominal infection, and fibrosis of the connective tissue in the crural ring of the opening of the diaphragm.

EXTRINSIC CAUSES OF DYSPHAGIA

The esophagus, located as it is in close relationship to important glandular and vascular systems, is prone to obstruction from pressure from external causes. One of the most frequent of these is extrinsic non-malignant tumors involving the thyroid gland. In my series there were 20 cases accounted for by external pressure causing a degree of stenosis.

Tumors of the thyroid	8
Retropharyngeal and esophageal infections	3
Tumors of the thymus	3
Mediastinal tumors	2
Aneurysm	2
Enlarged heart	1
Marked tuberculous kyphosis	1
	20

It is interesting to note how infrequent is the occurrence of aneurysm.

BURNS

Burns of the esophagus accounted for 31 cases. About half of these lesions were in the middle third, involving several cm. and producing a typical string-like stenosis.

Anatomically there are two important constrictions of the esophagus. The first is at the level of the cricoid and the second occurs at the level of the arch of the aorta which causes a definite indentation on the anterior wall of the esophagus.

The caustics pass through the mouth, pharynx and upper end of the esophagus rapidly with little disastrous effect, probably due to the presence of mucus. Because of the slowing up of the swallowed substances at the aortic arch, the caustic penetrates the mucous covering and the corrosive action on the tissues results.

PARALYSIS

Paralysis of the muscles of deglutition, while not a primary lesion of the esophagus, is here included because of the symptoms of dysphagia. This condition is easily recognized when the patient is examined fluoroscopically in the lateral standing position. When the barium paste is given the patient to swallow, the first thing

FIGURE V. Paralysis of the muscles of deglutition with distention of the pyriform sinuses and closure of the mouth of the esophagus in Parkinson's disease.

noticed is the inability of the patient to form the bolus on the tongue. The barium spills over to the sides of the tongue instead of remaining on the dorsum. The patient has to tip the head up to allow the barium to drop by gravity from the posterior part of the tongue, instead of being given the initial push by the tongue. The failure of the muscles of deglutition to function as the bolus passes their respective region is most striking. Instead of a motion picture one sees a "still," the pyriform sinuses are filled and the esophagus is closed. Some of the barium invariably escapes into the trachea.

Among the conditions accounting for these paralyses were found Parkinson's disease, fracture of the base of the skull, with the only symptom that of dysphagia, brain tumor and cerebral hemorrhage.

Paralysis of the esophagus itself was not noted.

Paralysis of the diaphragm causing an obstruction was not encountered although it has been reported in the literature.

POUCHES

Pouches of the esophagus are not infrequent. The most common site is just below the cricoid where there is a small triangular area at which point the longitudinal muscle fibres divide before attaching themselves to the posterior surface of the cricoid. Through this area, guarded only by the circular muscle fibres, a number of herniations take place. To this group is given the name pulsion pouches. One patient showed an esophageal pouch and two lateral pharyngeal ones.

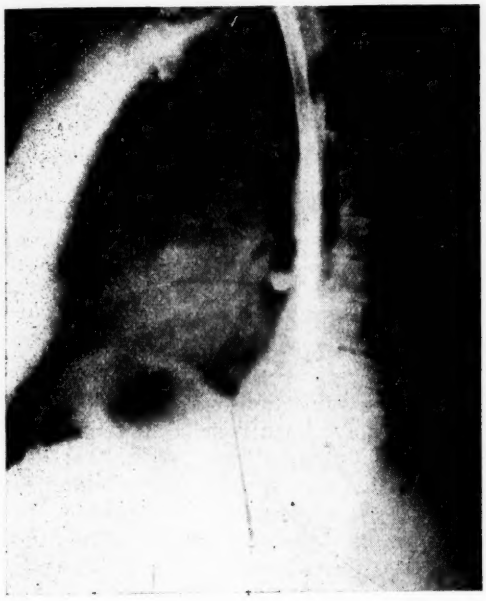

FIGURE VI. Perforating ulcer of the anterior wall of the nasopharynx at the level of the 8th thoracic vertebra.

Pouches occurring in the middle third are described as traction pouches and are supposed to be formed by a pulling out of the esophageal wall by attached tuberculous glands in the process of healing.

One case showed a typical perforation of the esophagus, probably due to ulcer and had all the characteristics of a diverticulum in other parts of the gastro-intestinal tract. Another case, with diverticulum of the lower end of the esophagus, was attributed to an ulcer.

Benign tumors, lipomas, fibromas, polyps, and lyomas have been reported. We have watched out for them but no case of benign tumor occurred in this series.

SUMMARY

1. The majority of the causes of dysphagia are encountered above the level of the episternal notch.

2. Thick barium paste is most satisfactory as a means of outlining the pattern of the lesion.

3. Cancer accounts for 45 per cent. of the intrinsic lesions of the esophagus in 534 cases, the occurrence being evenly distributed between the thirds of the esophagus.

4. Acute transitory spasm at the entrance of the esophagus should be differentiated from organic lesions or paralysis.

5. Diagnosis and localization of foreign bodies in the esophagus should be made before any attempt at removal is made.

6. The cause of non-malignant obstruction, with dilatation at the lower end of the esophagus, should be determined before the lesion is considered spasm.

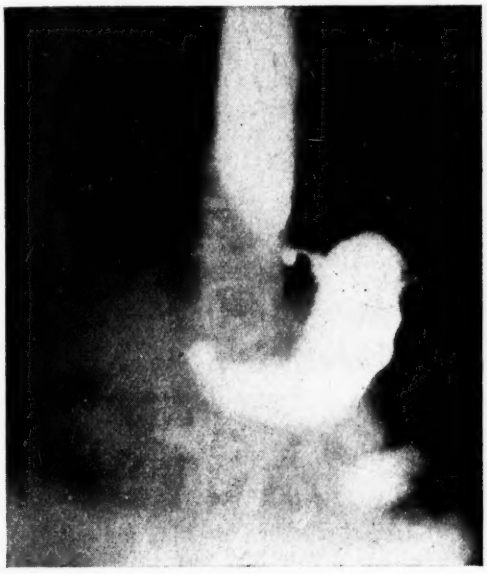

FIGURE VII. Perforating ulcer of the lower end of the esophagus with spasm causing marked dilatation of the esophagus.

BIBLIOGRAPHY

1 Manges, W. F.: Right oblique prone position for study of the esophagus. American Journal of Roentgenology, Vol. 16, p. 374.

2 Myerson: Medical Clinics of North America, 1926:27.

3 Guisez, Jean: Malignant tumors of the esophagus. Semon Lecture 1924. Journal Laryngology and Otology, Vol. 40, April, 1925, p. 213.

4 Zinn, Waitman F.: Esophagoscopy with report of cases. West Virginia Medical Journal, Dec., 1927, Vol. 23, p. 636.

5 Mosher, H. P.: Webs of the esophagus. The Laryngoscope, April, 1927, p. 21.

6 Kelley, A. Brown: Nervous affections of the esophagus. Semon Lecture 1926. Journal of Laryngology and Otology, Vol. 42, April, 1927.

7 Mosher, H. P.: The lower end of the esophagus at birth and in the adult. Semon Lecture 1929. The Journal of Laryngology and Otology, March, 1930.

8 Smyth, D. C.: Personal communication.

9 Guisez, Jean: De la Syphilis de l'esophage. Bulletin Academy de Medicine, Par., 90, Apr. 15, 1924, p. 483.

10 Mosher, H. P.: The lower end of the esophagus at birth and in the adult. Semon Lecture 1929. The Journal of Laryngology and Otology, March, 1930.

11 Oppikofer, E.: Geschwüre in Kehlkopf, Luft- und Speiseröhre bei Scharlach. Verhandl. Würzb., 1911, p. 501.

12 Kelley, A. Brown: Nervous affections of the esophagus. Semon Lecture 1926. Journal of Laryngology and Otology, Vol. 42, April, 1927.

13 Jackson, Chevalier: Bronchoscopy and Esophagoscopy. Saunders & Co., 1927.

14 Mosher, H. P.: X-ray studies of movements of the tongue, etc. The Laryngoscope, April, 1927, p. 1.

Discussion

Dr. D. Campbell Smyth, Boston: Dr. Macmillan's paper probably covers the largest (thoroughly studied) series of diseases of the esophagus ever published. When I refer to them as being "thoroughly studied" I refer to that peculiar opportunity Dr. Macmillan has with us of fluoroscoping and x-raying those patients and then having a chance to compare his x-rav and fluoroscopic findings with the actual clinical findings. He is always there ready at operation to look in and for that reason he has a wonderful chance to make exact diagnoses of esophageal lesions.

We at the Infirmary believe that any conclusions that Dr. Macmillan might draw in a paper such as this ought to be very sound and go a long way toward settling many of the outstanding questions concerning lesions of the esophagus today.

He referred very casually to the bougie and to the probang. I am sorry to say that the probang is still sold. It has killed many more patients than it has ever saved.

Every foreign body in the esophagus is a potential calamity. If physicians would only realize that foreign bodies in the esophagus as a rule are more dangerous to the patient than foreign bodies in the bronchi, they would be a little more careful about introducing bougies and probangs for their removal. These foreign bodies stick because they have a point or points. They lodge at a given region because they can get down no farther. The esophagus is very thin, and if a bristle probang is forcibly pushed down, the foreign body can be easily shoved through the wall of the esophagus into the mediastinum.

The mortality is under 1 per cent. if we get these cases uninterfered with. That is all we ask, that they be left alone. It is very distressing to have the patient come in and present a gangrenous esophagus, the foreign body being in the mediastinum and the patient's condition absolutely hopeless due to a well intended but ill-advised attempt at removal.

Myerson states that carcinoma amounts to 90 to 95 per cent. of the causes of the obstructions of the esophagus. Dr. Macmillan has brought out that carcinoma of the esophagus is only about a 40 per cent. cause of dysphagia. That in itself is gratifying. We may have patients who complain of difficulty in swallowing where a diagnosis could be made of carcinoma and may find we have a web or some slight stricture or an esophageal lesion which is easily dilated and will give a permanent cure. Those cases of non-malignant obstructions run over 50 per cent.

I believe as Dr. Mosher does that there is no such thing as a cardiospasm per se. It is due to a lesion in the lower region of the esophagus or a periesophageal lesion in the chest or upper abdomen, but I go farther and I believe that we have that same condition at the upper end of the esophagus. I have recently seen three cases where there was no lesion to be found in the esophagus itself, but in dilating it, it suddenly gave way as if tied from the outside with a purse string.

I do not believe there is such a thing as functional spasm at the upper end of the esophagus. Dr. Macmillan feels convinced that there is. I don't believe that by x-rays we can rule out a temporary paralysis of the upper end of the esophagus, and I think those cases should not be classified as functional until it is proven. Syphilis and tuberculosis of the esophagus I think are extremely rare. I have never seen a case of proven syphilis of the esophagus. Peptic ulcers at the lower end of the esophagus are also rare. Although recent literature might lead one to the contrary opinion, the truly proven cases of ulcer have been few. I have one proven case, a lantern slide of which has just been shown by Dr. Macmillan. A biopsy specimen taken from the edge of this lesion showed typical stomach mucosa with round cell infiltration. I have also two other cases which are not active and have not been proven by biopsy but from their history and the scar tissue now present I should say that they are probably healed peptic ulcers. These ulcerations take place in an aberrant island of stomach epithelium in the esophagus.

Chairman Butler: I will ask Dr. Macmillan if he wishes to add anything.

Dr. Macmillan: Nothing further, thank you.

Chairman Butler: We will proceed to the next paper, "Indications for the Use of Electrosurgical Methods," by Dr. William L. Clark, of Philadelphia. Dr. Clark!

INDICATIONS FOR THE USE OF ELECTROSURGICAL METHODS*

BY WILLIAM L. CLARK, M.D.†

THE value of high frequency effects known as desiccation and coagulation in the treatment of neoplastic and allied diseases, has been amply demonstrated by numerous workers in the field. When lesions are treated by either of these methods, wounds heal by granulation and no sutures are employed. The high frequency knife has likewise been shown to be useful in surgery. When it is employed, sutures are used to close wounds which would in most instances heal by first intention.

There is an impression among many of the

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†Clark—Medical Director, Clark Hospital, Philadelphia. For record and address of author see "This Week's Issue", page 129.

profession that the desiccation and coagulation methods are one and the same. This is an error, inasmuch as the effects produced on the tissues are quite different, and can be readily demonstrated, both clinically and histologically. The type of high frequency current by which desiccation is produced is of relatively high voltage and low amperage, whereas, the current by which coagulation is produced is of lower voltage and higher amperage.

One who depends upon any single method may hope to attain but a limited degree of success. Experience has taught me that the cold scalpel, electrosurgical methods, radium and x-rays, are all factors of such importance that none of them can be eliminated. All of these are employed in the Clark Hospital, Philadelphia, either alone or in combination, to meet particular indications, and if it became necessary to eliminate any of them, I would be seriously handicapped. I hold no brief for any particular method, but experience has demonstrated to me the extreme importance of electrosurgical methods. I consider them second to none, and in some emergencies, superior to all others. It is my desire to emphasize the importance of electrosurgical methods, without in the least detracting from the others. The terms desiccation and coagulation are employed because they describe the actual effects produced in the tissues. That high frequency currents produce these effects, can be demonstrated histologically.

DESICCATION

The desiccation method is one by means of which benign and malignant growths of small or moderate size may be destroyed by the utilization of heat of just sufficient intensity to desiccate or dehydrate the tissues. The heat is produced by a monopolar high frequency current of the Oudin type, the current being conducted to the lesion by means of a steel needle, or other pointed metallic applicator. Either a single or multiple gap may be employed in the circuit, but it must be so constructed as to be subject to refined regulation.

The proper current strength necessary to destroy growths of different types and sizes can be learned only by experience. The desiccation effect may be produced in the tissues either by delivering the current through a short air space by just touching the surface, or by inserting a needle more or less deeply, depending upon the degree of destruction desired.

The desiccation method is used advantageously when the lesion is comparatively superficial and localized, and when it is desired to avoid a contracted cicatrix. It is subject to such perfect control, that if the technic is correct, an exceedingly small growth, even on the cornea of the eye, can be successfully treated without impairment of vision or the subsequent formation of discernible scar tissue. A small growth on the vocal cords may likewise be destroyed without impairment of the voice. The desiccation method has been found to be most satisfactory for the treatment of localized epitheliomata or sarcomata occurring upon cutaneous surfaces or accessible mucous membranes. Likewise, it can be employed advantageously in the treatment of such benign lesions as warts, moles, nevus, vasculosis and pigmentosis, angiomata, lupus vulgaris and erythematosis, certain cases of exostoses, epulis, leukoplakia, papillomata, urethral caruncles, hemorrhoids, infected tonsils, etc.

COAGULATION

Coagulation is produced by a bipolar high frequency current of the d'Arsonval type. Either a single or multiple spark gap may be employed, but a good multiple spark gap is preferred by me. The current producing coagulation is more penetrating and intense than that producing desiccation, and in accessible locations is utilized to destroy larger tissue growths, and also where there is extensive bone involvement.

There are many variations of technic in the application of the coagulation method to suit the requirements of individual cases. These variations cannot very well be described, but must be learned from practical experience. I shall not, therefore, take the time to describe in detail the technic nor the physics of high frequency currents. These have been published, and the information is easily obtainable.

Whether the desiccation or coagulation method is employed, the aim should be to destroy the growth at a single operation. In lesions of the body surface, the devitalized tissue, should, as a rule, be removed immediately, either by excision or by curettage, which usually can be accomplished without hemorrhage. If necessary, the base may then receive further treatment. Excision or curettage following desiccation or coagulation is practiced less frequently in lesions within the mouth, than upon the skin surface, owing to the greater danger of secondary hemorrhage, because of maceration of the tissues by secretions, and also by the liquefaction necrosis caused by bacterial invasion. When excision or curettage following coagulation is not practiced, the devitalized tissue is permitted to separate slowly. The separation of the slough depends upon the character of tissue destroyed, and also its location. It may take but two days in some cases, and in other instances it may take as long as ten days. Bone, when subjected to coagulation, will sequestrate in about six weeks, if a current of proper intensity has been employed.

ELECTROSURGICAL METHODS AND IRRADIATION

In dealing with localized benign or malignant lesions, the superiority of these electrosurgical methods over irradiation is shown by definite

histological changes, and by comparison of clinical results. With electrosurgical methods the diseased tissue only is destroyed, the vitality of the surrounding normal structures being conserved. Subsequent treatments, should they be necessary, offer as good prospects of success as though the tissues had not received previous treatment.

On the other hand, with irradiation of such intensity as to influence a malignant or other growth, it is impossible not to lower the vitality of the surrounding normal tissue to a certain extent. In cases of recurrence, little more can be hoped for from further irradiation, owing to decreased radio sensitivity, and also owing to the resultant fibrous changes. These are facts well known to radiologists. Because of these resulting changes, irradiation should not be used routinely in conjunction with desiccation or coagulation, in distinctly localized benign or malignant lesions except in very malignant squamous cell lesions (grades 3 and 4, according to Broders), when irradiation should be considered to take care of possible outlying malignant cells, since there is a greater likelihood of recurrence in this type of lesion. Recurrences, however, after any treatment, may not always be due to incomplete work, but to new lesions developing in favorable soil.

There are many cases in which desiccation and coagulation are not applicable, and in which irradiation is preferable, but my experience has been such that I feel very strongly that these electrosurgical methods alone, with the exceptions noted, should be employed in the type of lesions mentioned, namely, primary localized lesions.

Desiccation or coagulation are both contraindicated in extensive lesions that cannot be destroyed in their entirety with one operation. If any of the disease is left, it will usually be stimulated to greater activity. If vital structures are involved, irradiation treatment is preferred to electrosurgical methods.

In addition to destruction of the primary lesions by these methods, it is quite necessary to treat the lymphatic drainage areas by radium, x-rays, or in some instances, a combination of both, to inhibit or destroy malignant cells migrating to the glands, or to destroy the pathologic element, if metastasis is already apparent.

APPARATUS AND OPERATOR

High frequency machines as devised by different manufacturers vary greatly in construction, hence there is a corresponding variation in the quality of the currents produced. The thermic intensity is often too great or too little, and an undesirable faradic effect, producing shock and contraction of the tissues, is to be expected when the improperly constructed machines are used. This lack of standardization is unfortunate, since to produce the desiccation effect under the best conditions an accurate balance must be obtained between the voltage and amperage, and also between capacity, inductance and resistance. Thus, different operators, employing various types of apparatus, may obtain different results. Much harm can be done by an operator without practical knowledge of the various factors involved. This warning seems appropriate, since a considerable number of cases have come under my observation that have been improperly treated by desiccation and coagulation. Electrosurgical methods can be best practiced only by those who have had surgical training and experience. These methods should not be considered as something distinct and apart, but as an adjunct to general surgical practice.

INDICATIONS

As before stated, desiccation and coagulation are adapted to treatment of benign and malignant growths of the skin and mucous membranes that are limited, and do not involve vital structures. These methods are, therefore, peculiarly adapted to treatment of such lesions occurring in any part of the oral cavity and adjacent parts, such as the lip, jaw, nose, throat, tongue, larynx, eye, sinuses, orbit, parotid gland, ear, etc. Likewise, they may be employed advantageously in growths of the bladder through a cystoscope, or through a suprapubic opening; also of the vagina, urethra, uterine cervix and the rectum. Since malignant lesions in the locations mentioned are prone to be very malignant, the efficiency of desiccation and coagulation is in some instances increased by the combination of the electrosurgical knife, the cold scalpel, radium and x-rays. The basal cell type of epithelioma, occurring as, for example, on cutaneous surfaces, such as the face and eyelids, even though extensive, and with involvement of bone, may be so effectively treated by the desiccation or coagulation methods, that recurrences are very infrequent, providing the work is properly performed.

In localized squamous cell epitheliomata on cutaneous surfaces or mucous membranes, the results are almost as good as in the basal cell type, depending to a great extent upon the grade, or in other words, upon the degree of differentiation in the cells from the embryonic to the adult cell. When the growth is no longer localized and metastasis has occurred, it is again emphasized that other methods must be used in addition. The choice between local or general anesthesia is a matter of personal judgment, although much of this work may be done under local anesthesia.

TECHNIC

There are many variations in technic of desiccation and coagulation to meet the various indications. This cannot be well described, and should be learned by studying the technic of a

capable operator, and then perfected by practice upon raw meat and laboratory animals, before attempting to treat patients. I desire to impress that the technic of desiccation and coagulation is not easy, nor should the work be undertaken lightly. Much good can be done by their judicious use, and great harm by their improper use, even in the hands of otherwise accomplished surgeons. Thorough preparation should, therefore, be made before engaging in what might be a hazardous procedure. While those who employ electrosurgical methods have reason to be enthusiastic, they should not grow so enthusiastic as not to realize the limitations of these methods, for they have, indeed, limitations.

Operators should be trained to know when other methods are indicated in preference to electrosurgical methods, and also when other methods should be used in combination with them. In this connection, we should not lose sight of the value of the cold scalpel, the high frequency knife, radium and x-rays, especially in cancer work. Electrosurgical methods cannot be practiced to full advantage without according to the methods mentioned full and equal consideration.

Each case should be regarded as a law unto itself, and studied with the aid of our superior present day laboratory and other facilities, intelligently and judicially, before a decision regarding the proper mode of treatment is reached.

FURTHER ADVANTAGES

In addition to the desiccation or coagulation of the affected tissues, and the sealing of blood and lymph channels, the heat penetrates beyond the area actually destroyed, and devitalizes malignant cells, without permanently impairing the healthy tissues, thus lessening the likelihood of local recurrence or metastasis, and conserving the maximum amount of normal tissue. The relief from pain and comparative freedom from postoperative discomfort are worthy of note.

Malignant cells, especially those that are least differentiated, are more vulnerable to heat and are devitalized at a lower degree of heat than are normal cells. The thermic sensitiveness to the action of the high frequency current has often been observed clinically and demonstrated histologically.

Desiccation is a most satisfactory method of treatment of infected tonsils, especially in adults, if the operation is correctly performed. If the technic is not good, poor results will be obtained.

Likewise, it has been found to be a most satisfactory method in the treatment of hemorrhoids.

ELECTROSURGICAL METHODS NOT OPPOSED TO REGULAR OPERATIVE SURGERY

Electrosurgery should not be considered as something opposed to regular operative surgery. It is proper that both of these surgical methods should be considered together, and, if possible, practiced, when indicated, by the same surgeon. The field of application, however, of both methods is so great and the technic so varied, that it seems to me quite proper that a surgeon who desires to do so may advantageously specialize in one or the other, neither opposing the other. The finer the specialization, the more expert one becomes. There is no special field in surgery in which desiccation and coagulation cannot be employed to advantage.

GROUP PRACTICE

Since it is well-nigh impossible for one man to become thoroughly proficient in the expert application of all these measures, group practice is perhaps the best solution. If one is not in a position to employ all recognized methods and adjuncts, either himself or in group practice, he should not attempt to treat cancer, except, perhaps, in selected cases.

HEMORRHAGE

When desiccation or coagulation is employed, hemorrhage immediately after the operation is not likely to occur, yet it may occur in certain cases, when the slough separates and large vessels are implicated. This risk, when such a possibility exists, should be obviated by preliminary ligation of the proper blood vessels, if it is practical to do so. This is especially true when the desiccation or coagulation methods are employed, in which case sutures are not used, and wounds heal by granulations. When the high frequency knife is used, the larger vessels are ligated, the incision sutured, and wounds are expected to heal by first intention.

GASTROSTOMY AND COLOSTOMY

In mouth and throat cases of malignancy, when a patient's vitality is low and he is undernourished, owing to inability to ingest the proper amount of food, a preliminary gastrostomy should be performed and the patient fed through a tube until in proper physical condition to withstand the proposed operation. A gastrostomy can be readily done under local anesthesia and the opening in the stomach closed after it has served its purpose. In some instances, a feeding tube passed into the stomach through the nasal passage can be substituted for the gastrostomy. Likewise, it is often prudent to perform a colostomy before treatment of cancer of the rectum. There are numerous other circumstances frequently met, wherein the cold scalpel and some form of electrosurgery can be employed to advantage in combination. Such operations as gastrostomy and colostomy may be performed either by the cold scalpel or by means of the high frequency cutting current. Many surgeons who have had experience with both methods prefer the latter method.

May I stress the fact that the desiccation or coagulation methods of treatment will frequently

reclaim cancer cases that would have been quite hopeless were these methods not available.

SCOPE OF ELECTROSURGICAL METHODS

The scope of electrosurgery in various phases is constantly growing, especially in breast, thoracic, sinus, pelvic, abdominal, rectal, genito-urinary, neuro-surgical, eye, tonsil work, etc. With still greater improvement in instrumentation, of technic, and with increased practice, I predict that electrosurgery will continue to grow in usefulness, indeed to be found indispensable to surgical practice.

HISTOLOGIC STUDIES

The microscopic picture of neoplastic tissue submitted to desiccation presents typical characteristics. While the cells still retain their outline, they appear shrunken, elongated and dried up. Evidence of such degenerative changes as hydropic or fatty degeneration are not discernible. The blood vessels in the immediate and adjacent vicinity of the field of operation are thrombosed.

In tissues subjected to coagulation, there is complete loss of cell outline. The neoplastic cell elements seem to have fused into a structureless, homogeneous mass, a hyalinized appearance resulting. The blood and lymph channels are thrombosed. The secondary and associated changes in all such lesions are degeneration and fibrosis. Whether the fibrous connective tissue shall be abundant and dense, or less abundant and soft, is influenced by the amount and nature of the accompanying degenerative and necrotic material, which in turn, are determined by the particular type of irritant. Thus, after desiccation, the fibrosis is slight, and the resulting scar is soft and pliable. Following coagulation, the fibrosis will be more or less abundant, this depending on the intensity of the heat generated and the consequent degree of frame destruction.

CONCLUSIONS

That desiccation and coagulation, when employed with correct technic, are the most satisfactory methods yet designed for the treatment of localized neoplastic and allied lesions of the skin and mucous membrane.

That the cold scalpel, the high frequency knife, radium and x-ray, are also valuable and indispensable in their respective rôles, and in some instances may be used advantageously in combination with desiccation and coagulation, each method complementing the other.

DISCUSSION

DR. JESSE W. SMITH, Honolulu, T. H.: I regret that Dr. Clark was not given time to exhibit all of his slides, because I am sure that they would have shown far more indications for the use of electrosurgery than anything I might say.

It has been my pleasure to have been associated with Doctor Clark for over a year, and I have had the opportunity of seeing him perform many of the most delicate operations. One can hardly realize what it is possible to do with this method of surgery until he observes it used by an expert.

Dr. Clute brought out a most interesting point; conflict of methods. This conflict is maintained by circumstances. The surgeon is equipped solely for operations, and radium and x-ray therapists equipped solely for radiation therapy.

This is not true in the Clark Hospital, because it is properly equipped for all methods known to medical science for the treatment of neoplastic diseases.

DR. LELAND S. MCKITTRICK, Boston: I do not want to extend the meeting, but I cannot let Dr. Clark go back without expressing to him my appreciation for what he has contributed to this work. Some of us who dabble a bit with radium and surgery and various phases of electrocoagulation and desiccation can appreciate these results. Dr. Clark's work makes me realize how limited my own acquaintance is with this type of therapy, and I wouldn't want you men and women here to feel that there is anything magic about the results he has obtained. They are results obtained because of a very extensive and intensive experience and indicate an intimate knowledge of the various phases of the disease and therapy with which he is dealing. I am overwhelmed at his results. Thank you, Doctor Clark!

DR. BROWN, Winchester: It is interesting to know of the events that occur in the lives of some people from which they build distinguished careers. I have in mind a story I heard a short time ago from the President of Brown University, Dr. Clarence A. Barbour. He referred to a little chap twelve years of age, a native of Serbia, who read the lives of Lincoln and Benjamin Franklin and was so inspired by them that he decided to go to America, where they had become so distinguished. When he reached the Port of New York and was taken in hand by the immigration officer, he was asked his name and gave it.

The immigration officer asked: "Do you know anyone in America?"

"No, I do not."

"Have you any relatives here in America?"

"No, I haven't."

"Have you any money?"

He took from his pocket what represented in American money five cents. That was all he had.

"Boy," said the immigration officer, "I am afraid I shall be obliged to hold you and send you back on this ship."

Then of course there was a great expression of disappointment evident on the youngster's face. Finally, the Port Officer returned and said, "Really, don't you know anybody here in America?"

The boy said, "Well, I did know two men in America."

"Who are they?"

"One was Abraham Lincoln and the other was Benjamin Franklin."

That psychological impression practically actuated the officer to allow the boy to stay here and have his chance. He ultimately located in Lynn, Massachusetts, and became a distinguished inventor; his name was Nicholas Tessler. Dr. Clark uses one of Tessler's electrical inventions in his work.

Analogous to that, not quite twenty-five years ago, Dr. Clark who was trained as a surgeon had a sacro-iliac joint, and was unable to perform his work; he went to New York where he met Dr. Titus who treated him and helped him. One day while there he saw a wart desiccated by a coil attached to an old static machine, and it was at that moment that electrosurgery was born in his mind, and you have seen the results of his work ever since.

He has distinguished himself, has studied his subject, educated others, and is building constantly a rich legacy that will not only last through this generation, but pass on to posterity.

We owe him a debt of gratitude.

CHAIRMAN BUTLER: Are there any further remarks?

This is a very wonderful paper that Dr. Clark has presented and it is a pity we did not have more time to give him and more time to bring out discussion. I want him to know officially that we appreciate his coming here to present this paper.

If there is no further business to come before the meeting, we will now stand adjourned.

The meeting adjourned at five-thirty o'clock.

The following officers were elected to serve for the ensuing year in the Section of Radiology and Physiotherapy:

Chairman—Dr. Arthur H. Ring, Arlington Heights.

Secretary—Dr. Ralph D. Leonard, Melrose.

THE DOCTOR AND THE BEDSIDE NURSE

Facts concerning nurses now in the private duty field have been gathered by the Committee on the Grading of Nursing Schools. These facts are of especial value to the physician who comes into closest contact with the private duty nurse, as she cares for his patients in the home or the hospital. The data were collected through questionnaires to nurses, patients, and physicians.

Fifty-four per cent., or more than half, of 24,389 graduate nurses active in their profession, in ten sample states, are in the private duty field, caring for patients in the home or employed as specials by hospital patients.

This is taken to be representative of the proportion of private duty nurses among all the active registered nurses in the country, of whom there are more than 210,000. A large proportion of institutional nurses, who make up 23 per cent. of the total number, probably also give bedside care to patients in the hospitals employing them. The 4,000 physicians queried were in substantial agreement that there is no numerical shortage of nurses.

Some 46 per cent. of the private duty nurses live in cities of 500,000 or more population. The rest are grouped as follows: 16 per cent. in cities of 100,000 to 500,000; 17 per cent. in cities of 25,000 to 100,000; 10 per cent. in cities of 10,000 to 25,000; and 11 per cent. in cities under 10,000.

The proportion of nurses to population in the smaller communities is far less than in the larger cities. One reason for this is a comparatively small paying demand for registered nurses in the rural districts. There is, however, a real need for the services of graduate nurses with high professional standards of nursing care in these communities.

Physicians stressed the necessity of good breeding and the ability to observe and report symptoms well, in their qualifications of a good nurse. The background and education of nurses, therefore, were carefully studied, as an index of their capacity to give intelligent attention to the patient and to carry out the doctor's orders.

About two-fifths of the private duty nurses are estimated to be twenty-six or less years old; about three-fifths are under the thirty-year line.

More than one-half, or 56 per cent., of those studied, had fathers born in the United States. The fathers of 12 per cent. were born in either of the Americas; 16 per cent. in the British Isles; 1 per cent. in France; 6 per cent. in Northwestern Europe; 6 per cent. in Germany; 1 per cent. in Central Europe.

More than half, or 58 per cent., come from homes in which the fathers were farmers or engaged in manufacture. Another 9 per cent. had fathers in some form of professional service, and 3 per cent. had fathers in public service.

Training schools are stressing the need of a high school diploma as an entrance requirement in many cases, to conform with the general rise in the educational level of the population and the rise in requirements for most types of employment and professions. About one in four of the private duty nurses today, of those studied, had never been beyond the first year of high school. Forty-two per cent., or somewhat less than half, had finished four years of high school. About one in five of those who finished training in the past five years had never been beyond the first year of high school, though ten per cent. had one year or more of college.

Figures on employment, gathered in March and August of 1927, show a picture of many nurses out

(Continued on page 122)

THE SOCIAL SIGNIFICANCE OF THE TEN-YEAR SCHOOL CLINIC PROGRAM FOR CHILDREN IN MASSACHUSETTS*

BY FRANK KIERNAN†

IT is with great pleasure that I have come from Boston to Michigan to tell you something of the social aspects and significance of the Ten-Year Program of the State Department of Public Health for the discovery and prevention of tuberculosis in the school children in Massachusetts. I bring to you the greetings of the State Commissioner of Public Health of our Commonwealth, Dr. George H. Bigelow, and the greetings and good wishes of the President of the Massachusetts Tuberculosis League, Dr. Frederick T. Lord.

Every worthwhile undertaking that I have ever known anything about has had a philosophy back of it. Sometimes this is consciously realized and stated and sometimes there is no analysis of the project made to disclose the philosophy but it is there just the same. The philosophy back of this Ten-Year Program, or the Chadwick Clinics as they are now called in honor of their founder, Dr. Henry D. Chadwick, is that if an inventory of the health of the children of the Commonwealth is made with respect to tuberculosis, while they are still in the school age, those who have been infected and have hilum, or childhood, or tracheobronchial tuberculosis, if placed in the proper environment, will develop a resistance to the disease which may enable them in adolescence and adult life to avert a breakdown from pulmonary tuberculosis.

Dr. Chadwick has explained to you the medical aspects of the project. He has outlined for you the technique, he has given you a report of the extent of the examinations among the children of our Commonwealth, he has given you an analysis of the findings, he has brought out the significant facts which have been deduced from the vast amount of data secured in the examination of 150,000 school children in the past six years.

My part is to tell you briefly of the community aspects of the Chadwick Clinics, of the significance to the present and future health of our Commonwealth, of the better understanding of public health in general by the public at large through the medium of these clinics, and finally some of the advantages which accrue to our Commonwealth, and to other States which may attempt a similar project, from this health inventory and program for our school children. I can think of no better way of doing this than to narrate briefly the plan under which the clinics are now operating and comment as I go along.

In the first place, the request for these clinics must come by formal vote of the local Health Department and the School Committee or Board of Education of the community that wishes the clinic. This was not always easy to secure in the beginning, but as time went on the clinics under the leadership of Dr. Chadwick, by their sheer excellence and scientific soundness, made for themselves a reputation so that now communities are vying with one another to secure them and the Department of Public Health is frequently having to assuage the impatience of communities that wish to secure them *hic et nunc*.

The applications for the clinics having been duly filed in writing by the local Board of Health and local school authorities, nurses from the Department of Health go into the community to make the practical arrangements. These involve suitable examination rooms in the school building or buildings and the securing of consent slips from parents, in which they request that the child be given a tuberculin test, an x-ray and such other examination as may be indicated, if he or she is found to be a reactor. The nurses also make contact with the local nurses in the communities and, by that friendliness which pervades the nursing profession, they almost invariably make allies of the local nurses in getting the groundwork done.

Then along comes Dr. Paul Wakefield, successor of Dr. Henry D. Chadwick and the guiding and inspiring genius of the Chadwick Clinics since Dr. Chadwick left us. Dr. Wakefield meets with the local boards and congratulates them on their progressive attitude in asking for the clinic. He meets with the superintendent, principal and faculty of the schools and portrays to them the advantages of the clinic and the coöperation necessary to insure success. If there is an organized medical group in the community, he speaks to the doctors and points out the benefits that will accrue to the children, the families and to the physicians themselves by having a more detailed statement of the exact physical condition of the children. If there is a woman's club or other civic body that should be addressed, Dr. Wakefield will do that also, so that by the time he leaves the community on his preliminary visit he has sold the idea—nay, he has done more—he has engendered in the community enthusiasm for the enterprise.

Then the day arrives. The consent slips have been assembled, the children are lined up, the physicians and nurses are on hand and the von Pirquets are given. The nurses, of course, prepare the arms and the physicians administer the tuberculin test. Ninety-six hours later the phy-

*Read at the Annual Meeting of the Michigan Tuberculosis Association, Lansing, Michigan, November 14, 1930.

†Kiernan—Executive Secretary, Massachusetts Tuberculosis League. For record and address of author see "This Week's Issue", page 129.

sicians return and the arms are read. Those children whose scarifications give evidence of tuberculous infection are assigned for x-ray examination. Films are all sent to the Westfield State Sanatorium where they are read by Dr. Roy J. Morgan—every one of them—as Dr. Henry D. Chadwick did when he was superintendent at Westfield. The films are then sent back to the examining physicians with the findings attached thereto.

The children who show x-ray evidence of infection are then brought in and the parents are strongly urged to come with them for the physical examination. It is here that I want to point out the significant social feature of this plan. Here the State Department of Public Health physician, who is not engaged in private practice anywhere in the Commonwealth, sits down in front of the child, with the mother or father or both, and with the x-ray findings before him gives a physical examination of the child. Can't you see that with this combination there is the rarest kind of an opportunity for educating the parents, who are, in most cases, only too eager to learn what should be done for this particular child—their own. If the Ten-Year Program in Massachusetts did nothing more than this, most of us think it would have been extremely worthwhile. The interested mother, the interested father or guardian receives from the examining physician advice and instructions and answers to their questions. The physician dispels unsound misgivings, emphasizes important details and minimizes falsely exaggerated unimportant ideas so that when the examination is through, the parents and even the child are aware of the regimen of life necessary to secure the best possible results in his case. It may be sanatorium care, it may be preventorium care, it may be summer health camp care, it may be open-air school treatment, it may be home care under the supervision of the family physician, but whatever it is, coming from the lips of the physician and in the presence of the child and with the x-ray at hand, you can see that it is one of the most effective ways of impressing on the responsible adult the importance of a proper program for the upbuilding and conservation of the health of the child.

Now there is another very important feature of the plan and one that has always appeared to me as a layman as having great potentialities for good and that is the interview of the parent and the child with the nutritionist after they leave the physician. For each clinic has a skilled, tactful, efficient nutritionist as an essential member of its set-up. The parents and child pass from the examining room to another where they are greeted by this charming and highly skilled and competent adviser on food, clothing and other essentials of rational living. I shall not dwell upon this interview. You can imagine what it is. Everything is written down. There is no guesswork and no attempts later to recall what Miss Burgess or Miss Drinkwater had said. If the child has need of more fruit or cereal, dark bread or light bread, it is written down. If the hours of sleep have been insufficient, the desired number is written down. If the clothing is unsatisfactory from a hygienic standpoint, that is recorded and when the parents leave the nutritionist they have an itemized list of recommendations from the physician and from the nutritionist. They have also what is possibly as valuable as either, a growing feeling that with the advice and coöperation of their family physician in carrying out this program which has been laid down for them by people who are especially skilled in handling this particular problem, there is every reasonable justification for expecting that the boy or girl may be steered away from tuberculosis.

Consider, if you will, this happening with over 150,000 children. Consider, if you will, that twenty-eight out of each one hundred little bodies have been fighting tuberculous infection, to a greater or less degree, before it was detected in the clinic. Consider the added value to the family and child of having the kind of program laid out for them which I have described. Is it any wonder that in the whole six years of the clinics there has hardly arisen any serious criticism of them, and, what is more amazing, no one has yet arisen in the Legislature, of which we have an annual session, to raise a voice against the appropriation of between $55,000 and $65,000 annually necessary to continue this work? If it were not worked out in a most scientific manner and handled with the most consummate skill, we would long since have heard criticism from that type of legislator whose yardstick of accomplishment is government frugality.

Now that is the plan and that is the way the plan works.

What are some of the results in terms of human lives?

Thousands of children have been referred back to their family physicians for periodic examinations, thousands of children have been given sanatorium care—children suffering from the childhood form of tuberculosis or those who have suspicious symptoms indicating some abnormal lung condition. Thousands of children have been placed in open-air or special health classes. Thousands of children have been received and cared for for a period of eight weeks in the twenty summer health camps of the Affiliated Organizations of the Massachusetts Tuberculosis League.

This leads me to a discussion of the part which the voluntary agencies play in this program.

In the first instance, the volunteer agency may be, and very often has been, instrumental in inclining the Health Board or the Board of Education towards asking for the clinic. The volunteer agency may be, and often is, influ-

ential in convincing the school administrators of the desirability of embracing the plan.

The volunteer association, while having little to do with the actual administration of the clinic, can by publicity both in the newspapers and by word of mouth create and develop understanding and sympathy and goodwill towards the project in the community.

Then, when the findings have been made and the all-important question of what to do and how to do it arises, the volunteer agency can, and does, furnish funds and personnel for the follow-up of the children. Technically the findings are sent back to the School Board and the Board of Health. This is as it should be. Practically, if the Board of Health nurse or school nurse cannot, because of other exacting duties, follow up these children, the volunteer agency makes it its business to see that they are promptly and adequately provided for.

In Hampden County, our County Tuberculosis Association has been called upon to give more coöperation with the Clinics than any other part of the Commonwealth. In this county, the chief city of which is Springfield, the County Association has secured the requests from the local school and health department, secured the consent slips from the parents, and taken care of the follow-up of the children.

Twenty-five hundred of these children are cared for during July and August in our twenty summer health camps. For others the follow-up by the school nurse and the Board of Health nurse must suffice.

I ought to say something at this point about our summer health camps. I have brought with me some copies of an article which Dr. John B. Hawes, 2nd, President of the Boston Tuberculosis Association, Mr. Frederic Edwards, Executive Secretary of our Hampden County Tuberculosis Association, and I wrote for the *Journal of the Outdoor Life*. This appeared in April, 1927, but the statements in it would not be different today except for a larger number of camps and a larger number of children cared for. This article gives the underlying philosophy of the camp, a description of the method of selection of children, a description of the camp procedure, including a careful daily schedule of camp life, and a somewhat detailed description of some of the individual camps.

I ought to make special mention of Prendergast Preventorium of the Boston Tuberculosis Association. Here is an institution maintained by the Boston Association which provides for forty children all-year-round, giving them preventorium care for a period of months or years as may be necessary. The average length of stay of the children is one year and a half. The weekly cost of maintaining the Preventorium is somewhere between $9.00 and $10.00 per child. In addition to the forty Preventorium children there are sixty additional summer camp children who are cared for during July and August and the per capita cost for these children runs about the same. So successful has this Preventorium been that three of our other County Associations are seriously considering extending the period of their present camp so as to care for children all-year-round.

We are also advocating the establishment of preventoria in connection with our County Tuberculosis Sanatoria.

During the winter some of the local associations conduct classes for the mothers of the children who have been at camp, and at these classes the subjects of nutrition, general hygiene, clothing, rest and recreation are discussed.

In the Boston schools there are a number of health classes in which children are given rest periods and a noon-day meal together with a light luncheon in the morning and the middle of the afternoon. These classes are so designed that the children who need them are able to continue with their regular grade work and still have the additional rest and nutrition. If you are interested in this type of class which was developed by the late Dr. John Ceconi, I would be glad to secure for you additional information on this subject.

It would not be fair to the private practitioner if I failed to say that he has played a very large part in the thorough follow-up of these children.

I need hardly tell those of you who are connected with the local and state tuberculosis associations in Michigan what a strong appeal work of this kind would make to your Board and to your public from whom you draw your support.

I need hardly tell you of the great value this plan is to the private physician, to the public clinics and to the tuberculosis society in locating sources of infection. After all, haven't we gone one step further in tuberculosis work than the idea prevalent just a few years ago that our job was done when we could locate the early case? Each case comes from somewhere. Isn't it our duty to find out where it is, who it is, and how many other persons may have been infected? This I regard as one of the most important by-products of the Ten-Year Program.

Perhaps some of you think that these clinics are designed for, and serve only, the people of moderate means and those below that economic level in society. This is far from the fact. I am told that a very considerable proportion of the consent slips are sent in at the very first by parents of well-to-do children, who are very keen to have their boys and girls given this thorough check-up by the experts of the State Department of Public Health. I am also aware as most of you are that many, many, many cases of tuberculosis come out of homes of the rich, where there has been plenty of money to provide the comforts of life but where there has not been the application of the knowledge

that is so readily available for the prevention of this disease.

Because of the careful manner in which the plan was originally laid out, because of the tact and good judgment exercised by Dr. Chadwick and his associates at the beginning and when the plan needed some readjustments, there has not been a community in the Commonwealth in which the Chadwick Clinics have not been counted successful and to which they have not been invited to return for the annual re-check of the children who need special attention.

I would not have you believe that this project has not been attended with some slips. It would be fatuous of me to attempt to lead you to believe that there have not been things which we wish had been otherwise. As for example, at the beginning, only the children 10% and more underweight were included in the program. Occasionally one of the Ten-Year Program nurses rubs a local nurse the wrong way and then there are serious complications which arise out of that grave mistake. Sometimes in the hurry to get through, the work has not been done with the thoroughness which Dr. Chadwick or Dr. Wakefield would like, but such occasions are rare and it would not be a human undertaking if it did not have some of these shortcomings. I believe, however, that they have been comparatively few and, as I said before, the fact that there has been no echo of criticism from the body which appropriates funds is proof that there has been a minimum amount of these peccadilloes.

That is the Massachusetts story.

There is no moral to be pointed out from all this. One cannot say that because this has been successful in the Commonwealth of Massachusetts, it would work in Michigan. Neither should one say that because it has worked in Massachusetts, it could not work in Michigan.

If your State could not see its way clear to inaugurate a similar plan, it might be worthwhile for your State Tuberculosis Association to do it experimentally in some parts of Michigan to see what success you would have. If it did prove successful, perhaps the State authorities would be willing to inaugurate it on a Statewide scale.

This should be said. The children are here. Since, in the examination in Massachusetts, 40,000 infected children have been found and the x-ray study of these has revealed some degree of tuberculosis in 3,000 plus 6,500 whose condition is such that they need to be kept under observation as suspicious, isn't it fair to say that the children of other commonwealths might advantageously have a similar survey made for them?

The thing that many of us like so much about the Chadwick Clinics is that they are pragmatic. The libraries and institutions of learning are choked with brochures and pamphlets and books which represent long and arduous toil in research studies but which have little or no practical value. Here is a study made on human beings, for human beings, by human beings. As a result of this study thousands of children have been placed in sanatoria, special classes, preventoria and summer health camps. The families of these children have been educated in better health ways of living. The study has resulted in an enlarged horizon of preventive medicine for the medical profession. And, in my opinion, one of the greatest results which has come from these Clinics has been the recognition by the people of the Commonwealth that the impersonal thing which we call government is interested not only in taxation and highways and agriculture and custodial care of the State's charges but that it has a vital interest in conserving the health of its most precious asset—its children.

PREGNANCY COMPLICATED BY TABES

BY JOHN T. WILLIAMS, M.D.*

THE occurrence of repeated pregnancies in a tabetic is sufficiently uncommon to demand more than casual interest. The writer had the opportunity to follow such a patient through several pregnancies, and it seems to him worth while to report the case, together with a brief review of the literature and some of the comments on the nerve supply of the uterus, so far as it has been worked out.

Mrs. N. L., first seen March 15, 1920, 29 years old, was born in Russia and had been married six years.

Past History. After having had three miscarriages at five to six months, she had given birth to a full-term baby, which died at the age of nine months from unmistakable congenital syphilis. The mother and father were then examined. Positive Wassermann reactions were obtained from both. After both parents had been subjected to prolonged anti-luetic treatment, and repeated Wassermann tests on both had proven negative, they were advised that it would be safe to again try to produce offspring.

The last menstruation, preceding the patient's first visit to the writer, occurred on December 5, 1919. The usual symptoms of early pregnancy were present.

Physical examination showed a poorly developed and nourished woman. Blood pressure 124/64. Pulses were equal, regular, of fair volume and tension. The heart sounds were clear and the action regular. The lungs showed good resonance and clear respiration.

The abdominal wall was relaxed, and the fundus uteri could be palpated two to three inches above the symphysis. Vaginal examination confirmed the previous impression of a three and one-half months pregnancy.

Abnormalities of the gait, knee jerks and pupillary

*Williams—Visiting Surgeon for Gynaecology and Obstetrics, Boston City Hospital. For record and address of author see "This Week's Issue", page 129.

reactions suggested pathology in the central nervous system, and the patient was referred at once to Dr. Isador H Coriat for neurological diagnosis. I am indebted to Dr. Coriat for the following and subsequent notes on the patient's neurological condition, which were taken from his records.

Neurological examination: Grasp of right hand weak, left good. Right knee jerk absent. Left knee jerk slight. Ankle jerks absent. No ankle clonus. Plantar reactions normal. No Babinski. Pupils unequal; left rigid to light, right reacts sluggishly. Slight nystagmus. Accommodation reaction normal. Coarse jerky tremor of outstretched hands. Ataxia of both legs. Diminished pain sensation over both legs. Slight whiteness of optic disks. Right elbow and wrist reflexes exaggerated, left diminished.

The patient went through her pregnancy without complications other than extreme weakness and difficulty in walking. The blood pressure reached 140/80 before the end of the pregnancy. The urine was consistently normal, however.

The delivery was normal, at term, on Sept. 19, 1920, and was practically painless, no anesthetic being required. The baby showed a negative Wassermann reaction and has been well since birth.

The weakness of the patient's limbs continued to increase and she was seen again by Dr. Coriat on July 1, 1921, the neurological findings being the same as at the previous examination. A blood Wassermann was again negative.

The patient again became pregnant in 1922 and went through a pregnancy uneventful except for weakness, difficulty in walking and slight incontinence of urine. On November 25, being close to term, she was awakened from sleep early in the morning by rupture of the membranes. Thinking that she had voided urine involuntarily and feeling a slight pressure on the rectum, she went to the toilet, and delivered herself, without pain, of a well formed full-term baby. The mother did not realize what had happened for several minutes, and the baby was drowned in the hopper before its birth was discovered. Although no autopsy was permitted, the child was well formed and not macerated and there could be no doubt that it had been born alive.

In November 1923, the patient became pregnant again. She was now suffering from lightning pains in both legs and had at times severe gastric crises. On August 5, 1924 she complained of severe pain along the course of the sciatic nerves of both lower extremities. The patient was near term and it was thought best to admit her to the hospital for observation. Examination showed no dilatation of the os uteri. At 2:30 the following morning she started to flow moderately. There had been absolutely no pain, but examination at 3:15 A. M. showed the os fully dilated with intact membranes protruding, and a head was indefinitely felt above the brim.

Slight uterine contractions were observed, but no expulsive efforts were made, and after waiting for an hour without progress, delivery was completed by internal podalic version. Anesthesia was given chiefly to guard against voluntary resistance by the patient. The child was a healthy male infant weighing 7½ pounds and did well. The baby's cord and blood Wassermann test were both negative. The mother made a good obstetrical recovery, but convalescence was prolonged by muscular weakness and ataxia.

The patient was again seen by Dr. Coriat on January 10, 1925. A resumé of his examination notes follows: Gait slow. Moderate ataxia. Speech normal. Tongue central, no tremor. No tremor of hands. Ocular movements normal. No nystagmus. Pupils unequal, right 3 mm., left 4 mm., both rigid to light but react well to accommodation. Optic disks show moderate atrophy, particularly of temporal sides, more on the left. Knee jerks and ankle jerks absent. Marked Romberg. No hypotonia of legs. Moderate hypotonia at wrists. Diminished pain sensation in both legs.

The patient was followed for some time with no particular change in condition. So far as known, she had no further pregnancies. Recent inquiries have failed to elicit replies, so that the patient's present condition, or whether she is still living, is unknown.

The literature on tabes complicating pregnancy is small. The incidence of pregnancy in tabetics is necessarily infrequent; first, because tabes is not apt to develop until later in life than the usual child-bearing period; secondly, because the preëxisting syphilis is likely to result in premature labors and miscarriages and therefore discourage the continuation of efforts at propagation; and finally because sexual feeling is diminished in tabes.

Gaussel-Ziegelmann[1] has written perhaps the most comprehensive article in the literature, collecting 68 pregnancies, of which 41 antedated the development of tabes, and 27 followed it. Of those antedating the tabes, 15% terminated in abortions and 56% in stillbirths or premature labors with death of the baby. These births in nearly all cases took place during the period of active syphilis. Of the pregnancies occurring in definite tabetics, however, only 18% terminated in stillbirth or premature labor. The inference from these figures is that the cause of the foetal mortality was syphilis and where this infection had been successfully treated, the development of tabes had no effect on the pregnancy. The effect of pregnancy on a preëxisting tabes was found not to be great. The increasing size and weight of the patient increased the difficulties of locomotion. Pressure from the developing foetus increased the incontinence of urine and aggravated the gastric crises.

Pitres[2] collected 90 pregnancies in tabetics, with 72% of living children, 12% of the babies being stillborn and 16% dying soon after birth.

Fruhinsholz and Remy[3], Dufour and Cottenot[4] and others have reported severe gastric crises during pregnancy. These may be associated with almost uncontrollable vomiting, or, in the latter weeks of pregnancy, may suggest labor pains.

Litchus[5] noted the inability of the patient to distinguish the movement of her own foetus in utero.

Grenier de Cardenal[6], Theis[7], Jakub[8], Allen[9] and others have contributed comprehensive articles on the subject. All observers agree on the painlessness of labor in tabetics and also on the inability of the patient to use her abdominal muscles to aid the expulsion of the child.

The pathological lesions of tabes are too well known to require description. The innervation of the uterus, however, is not so clearly understood. The uterus is known to be supplied by the sympathetic nervous system proper (not by the sacral autonomic as are the bladder and rectum). Afferent impulses are received and efferent impulses leave through the lower thoracic and first and second lumbar segments of

the spinal cord. The afferent impulses are received from the uterus by cells located in the posterior spinal root ganglia. From certain of these cells a central process is sent into the spinal gray matter, where it meets a connector cell situated not in the posterior horn but somewhat anterior to it in the gray matter, which sends out a connector neurone to an excitor cell located probably in the ganglia which have been demonstrated in the cervix uteri. Gaskell[10] states definitely that there are no cell stations for the uterus in the inferior mesenteric ganglion and that the nerve fibres going to the uterus merely pass through it.

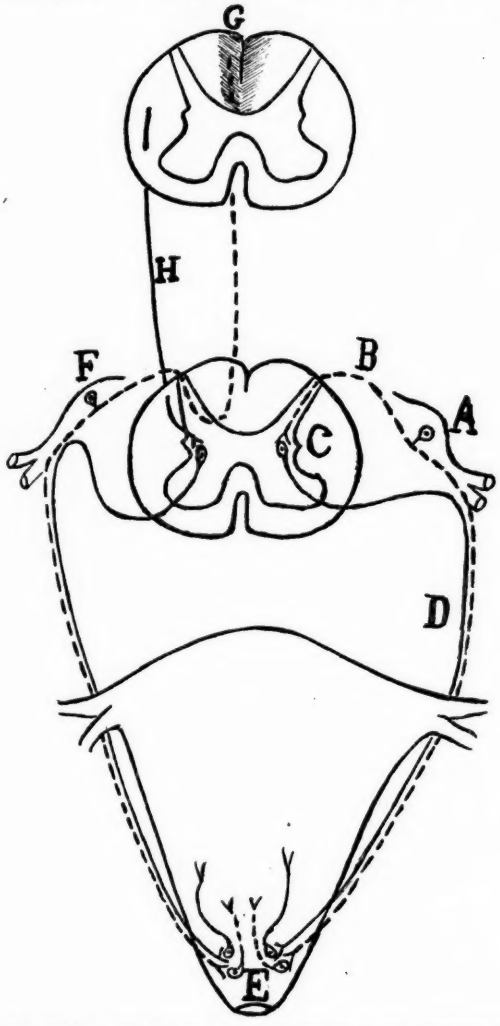

DIAGRAM SHOWING NERVE SUPPLY OF UTERUS.

(Sensory nerves fibres are represented by dotted lines. Motor fibres by continuous lines.)

On the right is shown the reflex arc. Sensory fibres pass from the cervical ganglion through the inferior mesenteric division of the sympathetic, entering the posterior spinal nerve roots where they reach their cell body located in the posterior spinal ganglion (A). From this cell body a central fibre (B) passes forward to a connector cell (C) in the lateral horn of the gray matter. The neurone from this cell (D) passes through the anterior horn, and passing through the inferior mesenteric ganglion reaches an excitor cell (E) located in the cervical ganglion. In this way a reflex nerve supply of the uterus is maintained at the level of the lower thoracic and first and second lumbar segments independent of cerebral and medullary control.

The cerebral connections are shown on the left. The sensory fibres pass from the cervical ganglia (E) to cells also located in the posterior nerve root ganglia (F). From these, central processes ascend to the brain through the column of Goll (G). Degeneration of this tract in tabes results in interruption of the painful impulses from the uterus. Motor nerves passing from the brain to the uterus (H) may be assumed to exist although their exact anatomy and function has not been worked out.

The existence of these cervical ganglia has long been known. Sir James Y. Simpson[11], as far back as 1871, demonstrated in the sow that spontaneous birth could take place after destruction of the lumbar and dorsal cord. Hoogkamer[12] and others have demonstrated the presence of these ganglia in the cervix, and Kurdinowsky[13] showed that parturition would take place from the uterus of a rabbit after extirpation, thus eliminating the influence of cells in either the central nervous system or the prevertebral ganglia. Fleming[14] has shown the existence of ramifying nerve filaments in the uterine muscle, but could not demonstrate nerve cells in the uterus outside the cervical ganglia.

That the sensory impulses transmitting to the cerebrum the perception of the labor pains ascend through the usual medium of sensory impulses from the lower half of the body, namely the column of Goll, is shown by the fact that the degeneration of this area of the cord in tabes results in painless labor, as has been repeatedly observed.

The existence of afferent impulses from the brain to the uterus has not been demonstrated, although the occurrence of these may be reasoned by analogy. There is no such thing as voluntary control of the uterus, but it is quite possible that the cerebrum exercises an inhibitory function, perhaps for the purpose of preventing too vigorous and prolonged pressure on the fetus during the uterine contractions. This is suggested by the rapid dilatation of the cervix in tabes and after transection of the spinal cord by trauma. In further support of such an hypothesis is the well recognized augmentation of the uterine contractions observed during Cesarean section under spinal anesthesia.

CONCLUSIONS

1. Pregnancy in a tabetic is possible, although necessarily of infrequent occurrence.

2. The presence of tabes in a pregnant woman is characterized by certain phenomena of interest and importance:

a) The gastric crises of tabes may be misinterpreted as pernicious vomiting or as the onset of premature labor.

b) The foetal movements are often unperceived by the patient.

c) All observers agree on the painlessness of labor, although the second stage is often ineffective because of the failure of the abdominal muscles to aid the uterine contractions.

3. The effect of the pregnancy on the tabes consists only in a temporary increase in the ataxia due to the change in the patient's centre of gravity.

4. The nerve supply of the uterus is derived through the sympathetic. All of the sensory

fibres reach the spinal cord by means of cells located in the posterior spinal nerve root ganglia of the lower thoracic and first and second lumbar segments. From certain of these cells neurones pass to the spinal gray matter, where they meet with connector cells which communicate reflex impulses to excitor cells located in the ganglia situated in the cervix uteri.

From others central processes ascend to the brain through the column of Goll. The degeneration of the column of Goll, which takes place in tabes, results in uterine anesthesia.

REFERENCES

1 Gaussel-Ziegelmann: Obstetrique, Paris, New Series, Vol. 3: 540-552, 1910.
2 Pitres, A.: J. de méd. de Bordeaux, 33:461-463, 1903.
3 Fruhinsholz, A. and Remy, A.: Ann. de gynec. et d'obst. Paris, 9 (2. S.):144-153, 1912.
4 Dufour, H. and Cottenot: Tribune med., Paris, 41:5, 1909.
5 Litchus: Quoted by Gaussel-Ziegelman, loc. cit.
6 Grenier de Cardenal: Thése de Bordeaux, 1903.
7 Theis: Verhandl. d. Gesselsch. f. Gynak. zu Leipzic, Vol. No. ?, 70-75, 1906.
8 Jakub: Zentralbl. f. Gynäk. 35:1273-1278, 1911.
9 Allen, E. M.: J. A. M. A. 69:979, Sept. 22, 1917.
10 Gaskell, W. H.: Involuntary Nervous System, London, 1916, p. 43.
11 Simpson, Sir James: Quoted by Marshall, F. H. A., Physiology of Reproduction, London, 1922, pp. 580-585.
12 Hoogkamer, J.: Archiv. f. Gynak. 99:231-244, 1913.
13 Kurdinowsky, E. M.: Archiv. f. Gynak. 73:425-437, 1904.
14 Fleming, A. M.: J. Obst. & Gynaec. Brit. Emp. 35:247-257, 1928.

THE DOCTOR AND THE BEDSIDE NURSE

(Continued from page 115)

of work, even in a time of general prosperity. The unemployment problem is intensified today because of general economic depression, and because the number of nurses in active practice has grown.

In ordinary times, the figures indicate, the typical nurse works about five days a week in months of heavy sickness load: about four days a week during other months. More than one in ten, or 12.3 per cent., had no work at all in the week studied for months of heavy sickness; three out of ten had no work at all in a week studied of ordinary sickness load. Less than one-half, or forty-five per cent., had a full week's work. Thirty-six nurses of each 100 were too sick to work one day out of seven in a typical week in March.

The typical private duty nurse works for pay seven months out of each twelve, gives one month of service free, and is "on call" fully four months of the year. More than half help support at least one other person. The typical yearly income is about $1300, with a salary range from nothing at all, during the year studied, to $3,600 for one nurse's income.

Taken together, these figures on sickness, unemployment and low income must be seriously considered in the light of the fact that continued poverty and unemployment inevitably demoralize a profession, by breaking down morale and lowering standards.

Informal comments from the nurses showed that, in spite of complaints about irregular employment, uncertain and often small incomes, and the professional loneliness of private duty, nurses really love to nurse.

"It is a grand feeling, after hours of strenuous nursing to see that steady climb to health which only the private duty nurse can glory in," writes one nurse. "I will keep on private duty nursing because I love the work," writes another. "I feel a great satisfaction in entering a home where all is confusion, due to sickness, and then, by being as tactful as possible, get things straightened out," says a third.

In nine out of ten cases, physicians would be glad to take the nurse on their last case back again, according to questionnaires from 4,000 doctors.

By his attitude and influence, the practising physician helps to raise the quality of bedside nursing. By asking the nurse for her credentials; by reporting instances of good care as well as bad; by showing the nurse he values good observation and the keeping of accurate records, the physician makes his influence felt.

NEW MALARIA CURE

Cleveland, December 31—Plasmochin, a malaria specific said to be better than quinine, was developed in Germany by experiments with canaries, which are susceptible to bird malaria, Dr. Reginald D. Manwell of Syracuse University today told the Parasitological Section of the American Association for the Advancement of Science. The remedy is a synthetic product known chemically as "n-diethylamino-iso-pentyl-8-amino-6-methoxy-quinoline".

One of the great advantages of plasmochin over quinine is the ability of the former to destroy the crescents of plasmodium, the crescent-shaped germ cells of malaria. Discovery of plasmochin's ability to destroy these cells is one of the most interesting results of the entire study, because the number of diseases in which such a result can be regularly obtained is exceedingly small.

Plasmochin has brought about the first known case of complete recovery from plasmodium elongatum, the type of bird malaria against which quinine is the least effective. The longer a patient is treated with plasmochin, the less severe any subsequent relapse is likely to be.—*Boston Evening Transcript.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17031

"GAS PAINS"

MEDICAL DEPARTMENT

A Finnish farmer fifty-one years old entered November 1 complaining of "gas pains" of three years' duration.

Except for appendicitis with appendectomy six years before admission the patient had felt perfectly well until three years before admission. Then he had a sudden attack of pain across the front of his chest over the precordium, over a corresponding area in the back and down both arms, severe enough to make him go to a hospital. There he was told or thought he was told that he had adhesions from his appendectomy. He attributed his pain to gas from the stomach pressing on his heart. Since the first attack he had had others much less severe occurring after meals, especially after dinner, also after exertion and emotional excitement and lasting all day or all night. He had not dared to walk fast. The pain forced him to stop what he was doing. He volunteered the comparison to an iron hoop tightening around his chest. He had some relief from a laxative and from soda. He had had attacks at night. Sometimes they woke him from sleep. Occasionally he had been nauseated and vomited with the pain. The last attack started about two weeks before admission and he had had pain every day since that time. Three days before admission it became quite severe while he was at work. After taking pills and morphia given by his physician he spent a comfortable night. He awoke the next day with the pain and stayed in the house all day. The night before admission it was so extremely severe that he thought it would kill him. He was unable to sleep at all. The morning of admission his physician had to give him three injections of morphia. This last attack and the first one stood out prominently as more severe than any others. With the attacks he had some palpitation and occasional irregularity of heart action.

Clinical examination showed a well nourished, ashen-pale man lying in bed groaning and muttering. The teeth were carious and ill-kept. There was marked pyorrhea. The apex impulse of the heart was questionably felt in the fifth space 12 centimeters from midsternum. The left border of dullness was 11 centimeters to the left, 1 centimeter outside the midclavicular line. The right border was 3 centimeters to the right, the supracardiac dullness 6 centimeters. The sounds were distant, of poor quality, the action regular. The aortic second sound was greater than the pulmonic second. There were no murmurs. The rate was 76. The pulse was thready. The blood pressure was 88/70 to 62/52. The abdomen, genitals, extremities and reflexes were normal. The pupils were slightly irregular, equal, reacted poorly to light and distance. The fundi showed arteriosclerosis.

The amount of urine is not recorded. The urine was alkaline, and showed a slight trace of albumin, specific gravity 1.012, 3 to 10 leukocytes and 50 to 75 red cells per high power field. (This seems to have been a catheterized specimen.) The blood showed 34,100 to 5,800 leukocytes, 95 per cent polynuclears, hemoglobin 90 per cent, reds 4,900,000, smear normal. A Hinton test was negative.

The temperature was 101° to 103.2°, the pulse 76 to 100, the respirations normal.

On admission the patient was cyanotic, prostrated and somewhat nauseated. The following day he had an attack of severe precordial and substernal oppression with a gripping sensation, a questionable amount of pain and a certainty of death. His blood pressure fell from 75/60 to 60/50. Nitroglycerin gave prompt and complete relief. The blood pressure rose to 70/55. That night the right upper chest showed dullness, increased tactile fremitus, bronchial breathing, bronchial whisper and crepitant râles. The right lower back showed diminished tactile fremitus, breath sounds and voice sounds, no râles. Two hours later the entire picture had changed. Both chests were full of coarse bubbling râles. There was frothy pink sputum. The patient was not especially dyspneic. The blood pressure was steady at about 70/50. He was given quarter grain doses of morphia an hour apart with marked improvement.

He remained in this condition until after 3 o'clock the next morning. Then he complained of severe precordial pain for which a quarter grain of morphia was given subcutaneously. The nurse could get neither the pulse nor the blood pressure. Suddenly the patient sat upright, tried to get out of bed, uttered a cry and fell back dead.

CLINICAL DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

To be charitable to those who had charge of his case six years ago, he was probably told he had cardiac infarction and he misunderstood that to mean adhesions about his appendix. There could not be a better history of coronary block. The comparison to an iron hoop has

been used in many classical descriptions. It is interesting that he used it, because he probably had not read those descriptions.

I suppose you realize this is one of the pains for which morphia is often not effective. One should hesitate to give any more under those conditions.

From this history I shall be very much surprised if we do not find coronary block.

NOTES ON THE PHYSICAL EXAMINATION

"Ashen pale" is a classical term in this disease.

I do not know what that ancient phrase "thready pulse" means. It is still a popular term. But I never felt any pulse that felt at all like a thread.

We have here a low systolic and low pulse pressure because the heart is doing very little work of any kind. A blood pressure of 60/50 is about as low as we ever get.

It is all the more interesting that nitroglycerin gave relief because morphia before apparently had not.

The night after admission he presented a picture of pulmonary edema.

DIFFERENTIAL DIAGNOSIS

This is a perfectly classical picture of coronary block. There is evidence of several blocks, old and new, with different vessels involved and several patches, old and new, in the heart walls. If we have that we naturally follow out the pathologic chain of its usual complications. (a) The first complication is an intracardiac clot where the endocardium has been diseased by the failure of the local circulation. We ought to find an intracardiac clot. It is very possible that a piece of that clot blocked the coronary at the end. (b) Coronary block often results in a pericarditis which often is not to be detected by stethoscope, which often accounts for a fever and leukocytosis. But we can have leukocytosis such as he had merely from infarctions without any pericarditis.

We have no evidence of disease outside the heart and its effect in edema of the lungs. He may have had pneumonia, but we have no good evidence of it. I do not believe we have any reason to suspect his stomach or duodenum of a peptic ulcer. It is a little better to make one diagnosis than two. I do not see any reason to look for a diagnosis outside the heart and lungs. There should be an extensive myocarditis, new or old, as a result of old and new infarctions and coronary block.

A STUDENT: What is the difference between coronary block and angina pectoris?

DR. CABOT: It is not sharply defined. The difference is that when we say "angina pectoris" we believe that no infarction will be found. They are different degrees, as I understand it, of the same thing. I think now that elderly cases of angina are practically always dependent on some degree of coronary disease, but without some thrombosis or blocking of the coronary. Angina pectoris refers to the cases in which the pain stops as soon as the patient ceases exerting himself. That pain is relieved by nitroglycerin. The prolonged pain of blocked coronary has no necessary relation to exertion or emotion and is seldom helped by nitroglycerin. We cannot always be sure of our diagnosis, but what our diagnosis means is that. We also get angina pectoris in young people after infectious disease. I had it myself quite markedly after pneumonia. I have seen it after merely a "sore throat". We do not need, then, if it is a young person, to suppose coronary disease. In an elderly person it is more significant of that.

A STUDENT: Is angina pectoris an anatomic diagnosis?

DR. CABOT: It is not. What we mean is merely pain in the breast due to cardiac weakness after infection or in coronary disease which has not gone far enough to cause block. The latter is the usual association if the person is elderly. Of course we get it also from syphilitic aortitis blocking the mouth of the coronary where the course of the coronary is normal.

A STUDENT: Can angina pectoris follow arteriosclerosis in elderly people?

DR. CABOT: Only when there is arteriosclerosis of the coronary. The vast majority of elderly people have some arteriosclerosis. It is an enormously common disease. But it is only when it affects the coronaries that we get this particular symptom which we call angina pectoris.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Coronary thrombosis.

DR. RICHARD C. CABOT'S DIAGNOSES

Coronary block.
Infarcts of the heart, old and new.
Intracardiac clot.
Extensive myocarditis.
Acute pericarditis?

ANATOMIC DIAGNOSES

Arteriosclerosis of the descending branch of the left coronary artery with thrombosis and occlusion.
Intracardiac thrombosis.
Bilateral pyelonephritis.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: This case showed very advanced sclerosis of the descending branch of the left coronary artery with calcification and narrowing, a fresh thrombus completely blocking the artery, and an adherent thrombus in the endocardium over it. We did not find any

emboliems in the distant parts of the body secondary to this.

There was one complicating factor of which there was no particular suggestion in the clinical history, a very marked bilateral pyelonephritis.

CASE 17032

A CASE OF ACUTE INTESTINAL OBSTRUCTION

Surgical Department

Presentation of Case

Dr. Richard W. Dwight*: *First admission.* The patient was a forty-five year old Englishman who first came to the Emergency Ward in July 1929 complaining of obstipation and lower abdominal pain.

He had been well and had had normal bowel habits until three weeks before entry, when he was suddenly seized with severe cramp-like pains starting in both flanks and moving to the midline. For relief of his pain the doctor gave him some medicine which had caused three loose bowel movements a day for several days. Two weeks before entry the patient began vomiting and had continued to vomit until entry. For four days before entry he had had no bowel movement and enemata had returned clear.

Clinical examination showed a fairly well-developed and nourished middle-aged man lying in bed in great distress. The abdomen was very much distended. At ten-minute intervals slow waves of peristalsis passed across it. Coincident with this, hyperactive peristalsis could be heard with the stethoscope, and the patient complained of pain. It was believed a mass could be felt by rectal examination at the tip of the examining finger.

At entrance the temperature was 99.5°, the pulse 85 and the respirations 20.

Laboratory data. The leukocyte count was 10,600, the red blood count 5,600,000, the hemoglobin 85 per cent. The non-protein nitrogen was 22 milligrams. The blood chlorides were 588. A guaiac test on the results of a soapsuds enema was positive.

X-ray examination with a barium enema showed complete obstruction in the sigmoid.

The following day a cecostomy was performed under local anesthesia. The cecostomy drained well. At the end of two weeks exploration was done under spinal anesthesia. Two independent carcinomatous masses were found in the distal portal of the sigmoid, the larger of them causing complete obstruction. Numerous polyps could also be felt in the colon, most numerous below the growth, more scattered above it. It was obvious that many were left. A new pelvic floor was constructed. The rectal stump was inverted below it. The sigmoid was resected and the end brought up for a colostomy. There was no evidence of regional or liver metastases.

The patient had a somewhat stormy postoperative course complicated by a bronchopneumonia. A week later the rectal stump was excised under spinal anesthesia. It was found to have perforated and there was a foul abscess under the pelvic floor.

Two months after entry the patient was discharged in fairly good condition with the cecostomy nearly closed, the colostomy working well and the rectal wound still draining slightly.

History of interval. The patient was quite well for eleven months. Twelve days before his second admission his colostomy ceased to function. A laxative produced some results, but constipation continued and he began to have griping pains in his abdomen. He did not vomit.

Second admission. Clinical examination. The abdomen was soft and not tender. There was a small sinus at the site of the cecostomy and a colostomy opening in the left lower quadrant. The rectal wound was closed.

X-ray examination with a barium enema showed no definite obstruction that could be demonstrated. A gastro-intestinal series showed barium in a dilated loop of small bowel on the right and large amounts of gas in the colon. It was believed that there were several points of partial obstruction.

Exploration revealed a loop of bowel adherent to a carcinomatous implant of the pelvis causing intestinal obstruction. Several other nodules on loops of bowel were observed and also two liver metastases. A lateral anastomosis was done around the point of obstruction.

The patient had an uneventful convalescence and was discharged relieved in twenty-six days.

History of interval. Almost immediately after he left the hospital he began to have pain in his right ankle, at times radiating to the right hip, increasing greatly in severity until he was unable to walk. It was relieved for short periods by capsules given by his own physician.

Third admission, two weeks after his last discharge.

Clinical examination showed no change since the last entry. There was no demonstrable lesion in the right leg.

X-ray examination showed the lumbar spine negative for metastases.

The patient was given a course of deep x-ray therapy which relieved his pain almost entirely. He was discharged improved. Arrangements were made for him to go to Pondville, but they were never carried out.

History of interval. Following his discharge he had frequent attacks of vomiting, but managed to be up and about most of the time. Two months after his discharge and two weeks before his fourth admission he began to vomit practi-

*Junior interne on the West Surgical service.

cally all his food, and the movements through the colostomy became small. For a few days before readmission he had constant cough and raised white sputum.

Fourth admission, two and one-half months after his third discharge.

Clinical examination showed extreme emaciation and dehydration. The heart sounds were of poor quality. The pulse was thready. There were moist râles all over the left chest; no dullness. The abdomen was very tender, with board-like rigidity, not markedly distended. There was pitting edema of the left leg.

Laboratory data. The non-protein nitrogen was 88. The blood chlorides were 535. The serum protein was 4.6.

The patient was given a constant intravenous. Within a few hours of entry he died.

Clinical Discussion

Dr. Robert R. Linton: I assisted at the first operation. This was a resection of the sigmoid involved by the growth. We knew we left a number of polyps. It was a question of what we should do about it, as we did not know how high up they went. All we could have done was a colectomy, I suppose, and that did not seem to be warranted.

At the second operation an exploratory laparotomy was done for subacute intestinal obstruction. We thought there probably were other polyps obstructing the colon, in view of the fact that he had so many polyps proximal to the sigmoid. Barium enema showed no large bowel obstruction. On exploration I found a loop of ileum involved in a carcinomatous growth at the brim of the pelvis. This was the point of obstruction. It did not seem wise to resect it; resection would not have cured him anyway, as there were many other carcinomatous plaques and several nodules in the liver, so the larger growth was short-circuited. The only question is whether that short-circuiting was done too close to the larger growth.

Pathologic Report, First Admission

Marked polyposis of the colon and rectum.

Two independent adenocarcinomas in the colon and one polyp that appeared to have early malignant changes.

Clinical Diagnosis at Third Discharge

Pain in the right leg due to metastatic carcinoma in the pelvis.

Clinical Diagnoses, Final, (from Hospital Record)

Carcinoma of the sigmoid.
Recurrent intestinal obstruction.

Anatomic Diagnoses

Polyposis of the sigmoid.
Carcinoma of the sigmoid with metastases.
General peritonitis.

Pathologic Discussion

Dr. Tracy B. Mallory: The autopsy showed the immediate cause of death to be general peritonitis. We could not find any obvious source. It was several weeks or months since his last operation. There was no perforation of the gut. We have to leave the mode of development entirely unexplained.

There were numerous metastases. The liver was full of them. There was metastasis in the lungs and there were metastases scattered all over the peritoneal surface. The small intestine showed two points of very definite constriction through one of which it was impossible to get even a little finger. The question arose as to whether they were new primary carcinomas developing out of polyps or whether they were metastases. Histologically they show tumor in the muscularis and the mucosa over them is perfectly normal. I feel sure they represent metastases rather than new primary tumors, although multiple malignancy in cases of polyposis is of course not uncommon.

Dr. Linton: Did you find any polyps in the remaining portion of the colon?

Dr. Mallory: There are numerous small ones.

Dr. Leland S. McKittrick: These polyps are an exceedingly interesting clinical condition. We see two types. First there is a single lesion which usually comes about 12 to 14 centimeters above the sphincter. Adenomatous polyps, I am quite sure I am right in saying, are potentially always malignant. If one of these lesions is allowed to remain that patient will eventually die of malignant disease, primary or metastatic from that lesion. From the point of view of treatment this is an exceedingly important thing, because it may mean that for a relatively benign-looking lesion we have to do a very extensive operation in order to cure the patient. Certain of these polyps respond very well to electro-desiccation or coagulation.

In the second group the lesions are multiple, being scattered throughout the large intestine. This type is well illustrated by a patient that Dr. D. F. Jones has recently had. A young woman in her early twenties came to him with a definite carcinoma of the rectum. In the course of the abdominal part of the operation he was distressed to find that her entire colon was full of polyps. He did his usual abdominoperineal operation for cancer of the rectum, removing the rectum and part of the sigmoid. There were two growths in that, both of which were malignant. He had the patient come back after an interval of two months and did the remainder

of the colectomy. He found a large number of polyps scattered throughout the colon, one or more of these already showing pathologically malignant disease.

DR. CHESTER M. JONES: Is it possible to tell at the time of exploration exactly how far up the polyps extend? I should think it would be worth while in such a case before operating to x-ray the patient according to the new method of dilating the colon with air after the ordinary barium enema. I think Dr. Holmes has done some of these examinations and they seem to show the polyps very well. It might be known in that way whether you were dealing with extensive polyp formation.

DR. GEORGE W. HOLMES: We have not done enough of these examinations here to be sure. They have done this type of examination at the Mayo Clinic for some time and are quite convinced that it is of value. They give the barium enema and after the patient has evacuated, the colon is inflated with air. The polyps then stand out distinctly.

A PHYSICIAN: How large do those polyps look?

DR. HOLMES: I should say pea-sized.

DR. OLIVER COPE: These were very small, as I remember them. When the terminal colostomy was made there were two or three polyps no larger than small lead shot just at the opening of the colostomy above the resection. It would be very hard to demonstrate those by x-ray.

DR. LINTON: I don't know. In the Mayo Clinic I saw those films. The polyps certainly are very outstanding. I think you can probably show by this method almost any sized polyp above the rectosigmoid.

DR. HOLMES: That is my impression. Isn't it true that the multiple polyps above the rectum are most likely to become malignant?

DR. MCKITTRICK: All or practically all of them are. You can be reasonably sure your patient will eventually have cancer.

DR. MALLORY: A certain number of cases have them in the stomach, too, along with the colon.

DR. A. V. BOCK: Do these polyps bleed?

DR. MALLORY: Yes, very characteristically.

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THE FERNALD MEMORIAL

THE death of Dr. Walter E. Fernald in 1924 marked the loss of a man in Massachusetts medicine who could not easily be replaced. To him should go the credit for establishing the modern methods of treating feeble-minded patients and for him the State has graciously named its school, by an act of the Legislature in 1925, the Walter E. Fernald State School.

Dr. Fernald's period of development of his institution extended over thirty-five years. He came to Massachusetts in 1887 and soon began the reorganization of our whole system of the care and treatment of the feeble-minded. He supervised the building of the School at Waltham and the farm at Templeton. In addition, he started a great school of his own for the instruction of medical men and women, not only from this country but from all over the world, who came to him as the leading exponent of the modern methods of treatment. His name should be remembered, therefore, not only as the pioneer in treating the mentally deficient, but also as a great teacher who handed on his ideas freely to others. A few years after his School was established, it became the centre for practically all work in the advancement of teaching the mentally deficient throughout the world.

It is not surprising, therefore, that the Massachusetts Department of Mental Disease should devote a special number of its *Bulletin* to Dr. Fernald and his work*. This publication contains the official record of the minutes passed by the Department of Mental Disease, the resolutions adopted by the superintendents of the other state hospitals and tributes to Dr. Fernald by Dr. George L. Wallace and Dr. Thomas W. Salmon. The rest of the volume describes the history of the care of the feeble-minded, the development of the Fernald School and the Templeton Colony, some notes on the private care of the feeble-minded in the United States, and a number of scientific contributions which emanated from his institution under Dr. Fernald's direction. In the latter class the most important is the long contribution by Dr. Abraham Myerson, entitled, "Researches in Feeble-Mindedness with Special Relationship to Inheritance." This is practically a monograph on the subject, covering over 120 pages, and will prove to be of great value to all those interested in the subject. In addition, there are notes on "Mongolism and Its Treatment" by Dr. Walter Timme, a paper by Dr. O. J. Raeder and Dr. M. M. Canavan on the "Pathology of the Feeble-Minded", and lastly, one by Dr. H. W. Potter on "Congenitally Syphilitic Mental Defectives." The volume closes with a critical bibliography of Dr. Fernald's publications.

Many remember Dr. Fernald for his well-marked characteristics of modesty, straightforwardness, clear thinking, and his broadness of vision, especially towards a problem which many people before his time saw only in the narrowest possible manner. Dr. Fernald visualized not only the feeble-minded child, but his relation to society, to his family, and the probable effectiveness of the patient after his training at the School. He was particularly interested also in attempting to correlate the psychometric tests of his patients with their school work, and this further with the pathology of their mental condition. No aspect of the problem of feeble-mindedness was too small to engage his attention. His perpetual enthusiasm, hopefulness, charm of manner, quickness of perception, and his clear speech are all remembered most pleasantly. Walter E. Fernald should be considered one of the outstanding physicians of Massachusetts during its three hundred years of existence.

*Fernald Memorial Number, Bulletin of the Massachusetts Department of Mental Diseases, Vol. XIV, Nos. 1 and 2, April 1930. Edited by Drs. G. M. Kline, D. A. Thom and G. L. Wallace.

BLOOD VESSEL VISUALIZATION

IN spite of the great importance of disorders of the circulation up until the present time no very satisfactory means of visualizing the blood

vessels in the living body has been developed. For some time the calcification of the arterial wall in arteriosclerosis has been recognized as a means of following the course of vessels and of estimating the extent to which they are diseased. This method has also been adapted to the study of aneurysms. Various injection masses of opaque substances have been used for the demonstration of blood vessels in connection with Roentgen ray studies after removal of the part from the body or after death.

While there have been attempts at the use of various opaque substances for Roentgen ray demonstration of the vessels in the living body, particularly in Germany, almost none of the substances tried have been satisfactory and the dangers of embolism must always be considered[1]. One of the relatively harmless substances used, sodium iodide, has been so variable in the results given that it is of little value beyond the ordinarily clinical methods of investigation.

Of particular interest, therefore, is the announcement of Saito, Kamikawa and Yanagizawa[2] that they have been able to prepare a form of lipiodol combined with lecithin and protalbinacid, with which they have been able to obtain excellent visualization in the living body of the arterial tree, even of the cerebral arteries and the finer vessels of the extremities. They state that in arterial visualization by this method no ill effects other than a sensation of swelling on the side of injection have been felt in a series of 130 cases. If the claims of Saito and his colleagues prove warranted, a new field of tremendous value has been opened up for the study of the circulation.

REFERENCES

1 Beberich, J. and Hirsch, S.: Klin. Wchnschr., 2:2226, 1923.
2 Saito, M., Kamikawa, K., and Yanagizawa, H.: Am. J. Surg., 10:225, 1930.

ARE PHYSICIANS LED ASTRAY BY REBATES?

A CIRCULAR distributed by the Wilbur X-Ray Laboratory of Boston sets forth that "we charge your patient $2 for a single picture, $10 for a complete mouth. Promptly on the first day of each month we rebate to you the balance between these amounts and our professional rates of $1 and $5".

An attempt to make it appear that the physician can properly accept this "rebate" seems to be suggested in the statement that "they are compensated for the extra time spent in studying and analyzing x-ray cases after the return of the radiographs".

This "extra time" of the doctor seems to be unnecessary because it is stated in the circular, "in each case an expert diagnosis is made by a recognized dental diagnostician" with the name of Dr. —— attached.

If this case can be construed as less reprehensible than the so-called splitting of fees, we would like to be enlightened. It would clarify the situation if the Committee on Ethics and Discipline of the Massachusetts Medical Society could deal with this matter by a test case. Would not a physician, desirous of getting a rebate, be inclined to patronize this establishment rather than select an x-ray laboratory on its merits?

We do not find the name of the "Dr." expert diagnostician in the directory of the American Medical Association, but his name is recorded among the registered dentists of this state. It will be of interest to know whether the State Board of Dental Examiners condones the association of a registered dentist with this form of advertising.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

GERBER, ISAAC. A.B., M.D. Harvard 1910. Consulting Roentgenologist to Rhode Island Hospital, St. Joseph's Hospital, Homeopathic Hospital of Rhode Island, City Hospital, Miriam Hospital, all of Providence, Pawtucket Memorial Hospital, Woonsocket Hospital, etc. Formerly Radiologist to Pondville Hospital at Norfolk, Mass. His subject is: "Radiation Treatment of Toxic Goiter." Page 95. Address: 201 Waterman Street, Providence, R. I.

CORBUSIER, HAROLD D. B.S., M.D. University of Michigan, 1899. Assistant in Surgery, Santa Mesa Hospital, Manila, 1902, and Military Hospital No. 1, Peking, China 1916. Chief of Reconstruction Section and as one of the operating surgeons, U. S. General Hospital No. 3, 1919. Instructor in Orthopaedic Surgery, New York Post-Graduate Hospital 1914-1916. Medical Training Officer and Instructor in Orthopaedics, Development Battalions, Camp Meade, Maryland part of 1918 and 1919. Attending Specialist in Orthopaedic Surgery, U. S. Public Health Service and Veterans' Bureau 1920. His subject is: "Motion Pictures Demonstrating the Application of Physical Therapy to Certain Orthopaedic Cases." Page 101. Address: Plainfield, New Jersey.

MACMILLAN, A. S. M.D. Tufts College Medical School 1917. Roentgenologist, Massachusetts Eye and Ear Infirmary, and New England Hospital for Women and Children. Assistant Roentgenologist, Long Island Hospital, Boston. Assistant in Roentgenology, Courses for Graduates, Harvard Medical School. His subject is: "Diseases of the Esophagus." Page 104. Address: 483 Beacon Street, Boston.

CLARK, WILLIAM L. M.D. University of Pennsylvania 1903. Medical Director, Clark Hospital, Philadelphia, Pa. His subject is: "Indications for the Use of Electrosurgical Methods."

Page 110. Address: 2215 Walnut Street, Philadelphia, Pa.

KIERNAN, FRANK. A.B. Executive Secretary, Massachusetts Tuberculosis League and Massachusetts Society for Social Hygiene. Secretary-Treasurer, Massachusetts Central Health Council. His subject is: "The Social Significance of the Ten-Year School Clinic Program for Children in Massachusetts." Page 116. Address: 1149 Little Building, Boston.

WILLIAMS, JOHN T. M.D. Harvard 1904. F.A.C.S. Instructor in Gynaecology, Harvard Medical School. Visiting Surgeon for Gynaecology and Obstetrics, Boston City Hospital. Obstetrician-in-Chief, Chelsea Memorial Hospital. Consulting Obstetrician, Whidden Memorial Hospital, Everett. His subject is: "Pregnancy Complicated by Tabes." Page 119. Address: 429 Beacon Street, Boston.

The Massachusetts Medical Society

SECTION OF OBSTETRICS AND GYNECOLOGY

A. K. Paine, M.D., *Chairman* — Fred. J. Lynch, M.D., *Secretary*

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Will you please discuss the problem of syphilis in pregnancy?

In this age of preventive medicine the control of hereditary syphilis assumes a place of importance. Various authorities, including Moore and Stokes, have estimated that the incidence of syphilis among the group of patients cared for by obstetricians varies from less than one to more than two per cent. In the class of patients who receive their prenatal care from clinics and outpatient departments the number of positives represent eight per cent. of the total. This figure is based on the survey made of 15 representative clinics in this country—by Dr. Parker in 1925.

Owing to the fact that the majority of prenatal patients are without symptoms at the time of examination, the blood test remains the one efficient means of diagnosis. Considering the information to be obtained from a test on these cases, the reasons for not taking one are relatively unimportant. There is a tendency to ignore positive Wassermanns in pregnancy if unaccompanied by subjective symptoms or a history of infection, but the fact remains that repeated positive reactions are an indication of the presence of the spirochaeta pallida.

The next step following the return of a positive reaction, whether it be a Wassermann or a Kahn or a Hinton, should be the prompt administration of anti-syphilitic treatment. Fortunately the number of individuals who cannot tolerate some form of salvarsan is not large, and for that group there remain bismuth and mercury. The inconvenience and pain resulting from the treatment will be well borne by the woman who understands that this is the price of protection for her unborn child. Since the treatment of syphilis in infants and small children is at best unsatisfactory, every effort should be made to avoid its necessity. (Study made by Dr. P. J. White and Borden Veider in St. Louis.)

Recent studies conducted both in this country and abroad have contributed some striking figures relative to the protective value of intensive anti-syphilitic treatment during pregnancy. In one hundred pregnancies occurring in untreated syphilitic women, fifty terminate in abortions, twenty-five result in babies who fail to survive infancy and twenty-five bequeath to the world children many of whom will later develop lues. The picture presented by one hundred adequately treated cases is entirely different, when ninety-five living healthy children testify to the value of the therapy.

To Summarize.

I. Syphilis in a latent form may be a complicating factor in any pregnancy.

II. The Wassermann should be part of the routine physical examination accorded to all prenatal cases.

III. Treatment given during pregnancy serves a twofold purpose: it safeguards the foetus from the invasion of the spirochaete and at the same time controls the ravages of syphilis in the mother.

Questions of a similar nature to the above will be discussed in the *Journal* each week. They may be addressed to the Clerk of the Committee in care of the *Journal* and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

THE BOSTON MEDICAL LIBRARY

DANIEL DRAKE

1758-1852

JUST as there were other colonial settlements on the Atlantic seaboard beside those of the Plymouth and Massachusetts Bay colonies, so there were other, and quite as noteworthy, colonial physicians as those who did their work in New England and the Pennsylvania and New York colonies. Among this number may be mentioned the name of Daniel Drake who was born in Plainfield, New Jersey, on October 20, 1785. His father and other male relatives were patriots who fought in the Revolution. When Daniel was three years old, his father, Isaac Drake, possessed of a roving spirit, pulled up stakes and went as far west as Kentucky where he, with several other families, settled at a place called Mays Lick, about 10 miles from the Ohio river. Later he describes the wild, free life of that unbroken wilderness where hardship and danger from the Indians had constantly to be encountered. It was in such an environment

that those qualities which aided to shape his distinguishing characteristics as a physician might well have developed.

Drake's father had an early inspiration to make a physician of him and so when he had finished such schooling as it was possible for him to acquire at Mays Lick, he was apprenticed to a cousin, Dr. John Drake, a physician of promise, who however suddenly died. The education which he had been able to procure up to that time would hardly, in these days, be regarded as an adequate premedical preparation. The small colony of some 30 people, constituting the population of this little hamlet, all came from East Jersey. Though they were illiterate, they were industrious, honest and pious. The teachers in their schools were of the itinerant type; books were few but there was a constant stream of pioneers passing through and young Drake, who was a good observer, picked up a great deal of information and knowledge of human nature from his contacts with them. He was fond of nature and the rigor of the outdoor life laid the foundation for a physical endurance that stood him in good stead, making possible the accomplishment of an amount of work that was truly remarkable. As a reflection of his fondness for nature and as a testimonial of what he had learned from her, he chose as the motto for the *Western Journal of Medical and Physical Sciences*, of which he became editor in 1826, "E Sylvis Nuncius." After the death of Dr. John Drake, his father, though disappointed that his son's education could not be carried on at home, set about to make it possible for him to go to Cincinnati, then a small town, where Dr. Goforth had settled. The latter had come into the territory from New Jersey on the same Ohio river boat that had brought the Drakes. Young Drake was apprenticed to Goforth for four years in the sum of $400, with the understanding that he should have two terms of schooling for the purpose of acquiring some knowledge of the Latin language. At the expiration of his term he was given a certificate signed by Dr. Goforth as Surgeon General of the First Division of the Ohio Militia. In the spring of 1804 he formed a partnership with his preceptor but in 1805 journeyed to Philadelphia to attend courses of lectures under Rush, Wistar, Physick, Barton and Woodhouse. He practiced medicine in Kentucky for a year after his return from Philadelphia and then returned to Cincinnati where he married Harriet Sisson, an accomplished young woman who was a most admirable companion for him during the next 20 years, or until her death. He went to Philadelphia a second time after 11 years of practice in Cincinnati, this time to come away with a Doctor's degree, from the University of Pennsylvania. This degree was conferred as a mark of special distinction, the faculty having been convened to confer this single diploma. Drake made the following comment at the time he felt the urge to go back to Philadelphia for further study: "No business can be conducted without renovating the capital stock as it becomes wasted. It is now many years since I began the practice of Physic, which is a trial of ideas, and I begin to seriously feel an exhaustion of scientific funds. Not being able to replenish them I said but little, being willing, like others, to support my credit as long as it was possible." There was a University at Lexington, Kentucky at this time and about a year after his second return from Philadelphia he was elected to the Chair of Materia Medica at Transylvania, as this University was called. He was associated there with Benjamin Dudley, who was soon to become nearly as distinguished a surgeon as was Drake a physician. He remained only one session, however, after which he resumed his practice. With this experience in teaching began a series of failures and partial successes in establishing medical schools in connection with the College of Ohio, Transylvania, Jefferson, Miami and Louisville. Various causes operated to bring about the vacillation between success and failure in these proprietary schools, due partly to financial and professional jealousies. About the only defect noted by anyone who has written of Drake was his tendency to have too many irons in the fire and it may be that this militated somewhat against success in the earlier days of his professional life. It also appears that Drake was a difficult person to get along with, a defect which probably grew out of his own conscious superiority over such men as he could find in that raw country to aid him in laying the foundation of a medical school. He demanded for himself unqualified domination over all departments of the School and if he could not secure it he would wreck it and start another. The longest time he ever remained in connection with any school was at Louisville toward the close of his teaching career. Here he managed to be content for ten years. Further details of his efforts to establish a medical school upon stable foundations may be passed over, for conditions were highly unfavorable at that time in so new and sparsely settled a community. Suffice it to say that during the time it was possible to hold a faculty together there seems to be no question of the high quality of the instruction which was provided by Drake and the men associated with him and that eventually two sound institutions were permanently organized, one in Louisville and another in Cincinnati. To Drake must be given the chief credit for this accomplishment.

In contradistinction to these qualities which stood in the way of his establishing a medical school he appears to have been of a courtly nature and of a most distinguished and graceful bearing, qualities which he probably cultivated through reading the "Letters of Lord Chesterfield," one of the five or six books to which he had access during his school days in Kentucky.

He has frequently been compared to Lincoln in the way he came to the forefront of his profession and developed qualities giving him mastery over men, and that without any of those accessories which are commonly regarded as essential to such development. His command of forceful English, whether spoken or written, was one of his prominent characteristics. He was a strong advocate of the abolition of slavery, eventually, and took the ground that it should be for that time limited to the states in which it was already an institution. He did much to bring the city of his adoption into prominence by two publications, the first entitled "Notices Concerning Cincinnati" and the second, in 1815, a "Picture of Cincinnati." He foresaw in the great valley of the Mississippi a wonderful development of commercial life and visualized a system of waterways and railroads which were to aid in the realization of the commercial supremacy of this section, but more than that, he believed that they would be a factor in bringing together people whose sectional interests were driving them further and further apart and were to lead, later on, to Civil War. After the war was over one of the railroads he so strongly advocated was built. Remembering his own difficulties in securing an education, Drake set himself to the task of securing better opportunities for the youth of his city and the surrounding territory. It was this memory that induced him to help in the founding of a college for teachers just as it did to seek for the establishment of a local medical school. He also originated the public library in his home city. About the same time he secured an appropriation of $10,000 from the legislature to found a hospital in Cincinnati. One of the most remarkable of his accomplishments, however, was the publication of his 1700 page work on the "Diseases of the Interior Valley." He spent a tremendous amount of time in actually traveling up and down this territory (over 30,000 miles on horseback, in canoes and on river boats and trains) and in correspondence with physicians throughout the region, in collecting the material which he used.

One of the developments of medicine which his purely clinical studies anticipated by a good many years, was the conviction, reached in 1832, that many diseases were microbic in origin. Among these he included typhoid, malaria and cholera. Few bacteriologists, even now, could go much further than he felt justified in claiming in the following quotation: "Among visible plants and animals," he writes, "there are species that form no poison and others which secrete that which applied to, or inserted in our bodies produce a deleterious effect, which is generally of a definite kind. Thus the venom of the rattlesnake produces a disease of definite form; certain fish are poisonous when eaten; bees and wasps instill venom and the smallest gnat, the sand fly, inflames the skin. It seems justifiable to ascribe, by analogy, to microscopic animals and plants the same diversity of properties which we find in larger beings, differing from them, as we may presume, in nothing but size and complexity of organization. We may suppose then that while many species of this minute creation are harmless there are others which can exert upon our systems a pernicious influence."

His life was so full of activity that one hears less of him as a practitioner than of some other men of his period. There were so many interruptions for travel in connection with his studies on the "Diseases of the Interior Valley" that one could scarcely expect that he could hold a general practice in the face of so many prolonged absences. These journeys took him all the way from Hudson's Bay to the Gulf of Mexico. During his earlier years he did have a large practice and retained to the end of his life many of his old patients. He continued to teach and attend upon his hospital service up to his last illness which was a development of a long-standing cerebral difficulty which Dr. Samuel Gross alludes to in his account of Drake's life, but to which he does not give a name. He died on November 5, 1852.

DINNER TO DR. EDMUND H. STEVENS

On January 2, 1931 a dinner was tendered to Dr. Edmund H. Stevens at the Algonquin Club on the occasion of his 85th birthday. The affair was arranged by a group of Dr. Stevens' friends and professional associates under the chairmanship of Mr. William A. Muller. The guests, who numbered over 200, included many life-long patients and friends of Dr. Stevens as well as a number of his colleagues in the profession.

Mr. Muller acted as toastmaster and speeches were made by the Hon. James M. Curley, Rev. Samuel A. Eliot, Dr. Alfred Worcester, Mr. Hugh D. McLellan, Prof. Albert Bushnell Hart, Hon. James A. Bailey, Dr. Fred B. Lund, Mr. Damon E. Hall, Dr. Augustus W. Dudley and General Hugh Bancroft. In responding Dr. Stevens spoke of modern trends in the practice of medicine and especially of the relationship between general practice and specialization and of the sound training and high professional qualifications necessary to the former as well as the latter.

After the speaking Dr. Stevens was presented with a large silver bowl and two tall silver vases filled with 85 red roses.

THE APPOINTMENT OF DR. STEPHEN RUSHMORE

One of the last acts of the retiring Governor Frank G. Allen, was the appointment of Dr. Stephen Rushmore to fill the vacancy on the Board of Registration in Medicine caused by the resignation of Dr. Horace Arnold.

Dr. Rushmore was born in Rochester, New

York, October 19, 1875. His early education was acquired in the High School of Plainfield, New Jersey, this being followed by entrance to Amherst College from which he graduated in 1897. He studied medicine at the Medical Department of Johns Hopkins University graduating in 1902. He came to Boston and began practice, specializing in gynaecology and obstetrics. He served as Dean of Tufts College Medical School for four years resigning in June 1927.

This appointment was a gracious recognition by Ex-Governor Allen of a physician who has attained eminence in Boston and whose interest in medical education has fitted him for the position to which he has been appointed. Dr. Rushmore is now engaged in private practice of his specialty and is a member of the editorial board of the *New England Journal of Medicine.*

By reason of the legal requirements relating to appointments on the state board, which do not permit majority representation of any one medical society, Dr. Rushmore resigned his membership in the Massachusetts Medical Society. This means a sacrifice which would warrant extending the courtesies of the Society to one who is thus deprived of the benefits of membership in this body. We are confident that the board will find in Dr. Rushmore a very enjoyable associate.

MISCELLANY

HARVARD MEDICAL SCHOOL PUBLIC LECTURE

Dr. Richard M. Smith delivered, on January 4, the first of the free public lectures at the Harvard Medical School, taking as his topic the mortality rate as an index of community progress.

Fifteen or twenty years ago an infant mortality rate of 100 per 1000 births was considered reasonable. Now the rate for the first year is 64.7 in Massachusetts and 67.3 for the entire United States.

Prenatal influences stand as the chief cause of infant mortality, pneumonia as the second and congenital causes as the third.

GOOD SAMARITAN HOSPITAL FUND

A gift of $34,200—plus a conditional sum of $51,300 from the Commonwealth Fund of New York to the Good Samaritan Hospital Fund, to pay salaries, over a five-year period, of a research staff seeking prevention and cure of rheumatic heart disease, was announced on January 5 by Alan Cunningham, president of the board of managers of the hospital, following a meeting of the board. This gift, totaling $85,500, in addition to the sum of $168,671, to date, secured in smaller contributions, makes a grand total of $254,171 toward the $500,000 campaign goal.

According to the terms of the Commonwealth Fund gift the hospital will receive $17,100 a year for the first two years after the proposed wing for the research department is erected and an adequate staff installed, and that annual grants of a like amount will be made the third, fourth and fifth years, provided the work is satisfactory. It is expected that the addition adjoining the hospital at 25 Binney Street will be completed by summer.

The Commonwealth Fund gift covers only the salaries and expenses of the research staff and a field worker and does not provide for additional cost of operating, heating and lighting and for all necessary laboratory materials. The board of managers feels that sound management requires that the cost of operating this plant should be met entirely out of endowment, rather than result in any increase in annual deficits.

Although the goal of $500,000 has not yet been reached, the hospital is carrying forward its plans for the erection of the wing in the near future and is looking to the people of Boston for the additional funds necessary to assure the continuation of its much-needed work on a permanent basis.

The Commonwealth Fund gift, the managers feel, is the finest possible endorsement of the pioneer, humanitarian service which the House of the Good Samaritan has been giving to the public for the past seventy years. The prompt recognition by this foundation of efforts to solve an acute problem is highly encouraging at this time.

DR. W. C. RAPPLEYE BECOMES DEAN OF THE SCHOOL OF MEDICINE OF COLUMBIA UNIVERSITY

Dr. Willard Cole Rappleye has been appointed dean of the School of Medicine of Columbia University to succeed Dr. William Darrach who has resigned because of "reasons of health" according to his explanation.

Dr. Rappleye is 39 years old. He received his A.B. at the University of Illinois and his M.D. degree from The Medical School of Harvard University in 1918. He subsequently acquired the degree of Master of Arts from Yale University. He has held several important positions having taught biology at his Alma Mater, served as laboratory instructor in the Harvard Dental School, was pathologist at the Massachusetts Foxboro State Hospital and was medical house officer in the Massachusetts General Hospital. He was the director of the Hospital at the University of California and also the New Haven Hospital. He has been the director of the Commission on Medical Education since 1925. Dr. Rappleye has many friends in New England who will be gratified because of the recognition of his outstanding abilities.

Dr. Darrach will continue relations with the Medical School as Dean Emeritus and continue his clinical teaching.

THE BEST HEALTH YEAR

Statistics of the Metropolitan Life Insurance Company show that the health conditions of the United States and Canada among its policyholders for the eleven months of 1930 were the best ever recorded.

Since these records apply to 19,000,000 industrial

policyholders, they may be regarded as a reliable index of the health of these countries.

Of especial importance it was found that the cancer mortality gains of previous years have not persisted and that there was a drop in the diabetic mortality.

The only disconcerting item was the considerable rise in the suicide death rate.

Nothing but a great increase of deaths in December will modify the figures.

PATERNITY TESTS OF NO VALUE IMMEDIATELY AFTER BIRTH

The blood tests to determine paternity are of no value until the infant is at least two weeks old according to the dictum of Dr. Carl H. Smith of Cornell University Medical College.

During the first two weeks of an infant's life its blood group is influenced by the effect of the maternal blood. After this period the child's blood group becomes established and the test is fairly reliable.

THE COFFEY-HUMBER THEORY OF CANCER CONTROL NOT ENDORSED

Last winter Drs. W. B. Coffey and J. D. Humber of San Francisco claimed to have done work with the extract of the cortex of the adrenal glands which might have useful application in dealing with cancer.

Now a report of the use of an extract of the cortex of the suprarenals in treating cancer in mice by Drs. Itami and McDonald of the University of Pennsylvania seems to indicate that this treatment is without value.

Thus another hope for the cure of cancer seems to be futile.

With the concentration of many minds on the cancer problem, the riddle will in all probability be solved, but at present only the established methods of surgery, radium and x-ray seem to hold any hope for the unfortunate victims of this disease.

Even with actual progress it is to be hoped that no undue publicity will precede the correct presentation of facts.

MEDICAL SERVICE FOR FIFTY-TWO DOLLARS PER YEAR

A group of physicians of the New York Medical Guild have considered furnishing periodic physical examinations and all medical, surgical and hospital care at Cooperstown, New York, for an annual charge of $52.00 to the individual, provided that the plans prove to be successful. The proposal has been endorsed by the Twentieth Century Foundation.

This scheme will be watched with interest, for it will depend upon the cordial and loyal coöperation of the group as well as the quality of service rendered.

It is expected that the average number of patients cared for by each doctor will be between 500 and 600 and the fee may be met by weekly, monthly or yearly payments.

The New York Medical Guild is a branch of the American Medical Syndicate founded by Dr. E. M. Josephson, who graduated from Columbia University College of Physicians and Surgeons in 1917. He is located, according to the latest edition of the American Medical Association Directory at 993 Park Avenue, New York City.

ORGANISM FORMERLY DESCRIBED AS THE CAUSE OF PSITTACOSIS NOT FOUND IN THE RECENT OUTBREAK

The cases of psittacosis which developed in the United States during the recent outbreak (1929-1930) were largely attributable to contact with birds imported during November and December, 1929. One hundred and sixty-nine cases of the disease with 33 deaths were recorded in this outbreak.

An intensive search for the bacillus psittacosis, formerly described as the cause of the disease, was made in the carcasses and excretions from parrots that were shipped to the National Institute of Health of the Public Health Service, in experimentally infected and in normal parrots and parrakeets, and in material obtained from human cases. No strain of bacillus psittacosis or of any other member of the related group of bacteria was found.

Evidence was secured, however, suggesting that the causative agent of psittacosis in birds is filtrable.

Workers of the Public Health Service in connection with the human and bird cases found certain organisms, provisionally designated as Rickettsia psittaci, which may be proven to be the causative factor.—*United States Public Health Service.*

CORRESPONDENCE

PNEUMOCONIOSIS

December 31, 1930.

Editor, *N. E. Journal of Medicine,*

Dear Sir:

In the December 25 issue of the *Journal of Medicine* there is a review of a book by Dr. J. A. Fraser, entitled, "Trauma, Disease and Compensation." In the next to the last paragraph of the first column of this review is the following:

"The chapter on 'Pneumoconiosis' is well worth reading as the present tendency of chest men is to call the condition when diagnosed, a disability, no matter if the man by all working standards is still working and able to continue."

As I am one of the chest men in Boston and as the reviewer of this book as well as the author infers in this statement that the position which chest men take is wrong I wish you would call this to his attention. I have probably seen as many, if not more, cases of pneumoconiosis than any other physician in this state during the past fifteen years and have certainly testified before the Industrial Accident Board more times than any physician in Massachusetts in such cases. Up to recently these cases were not generally diagnosed until the symptoms were marked when it was evident that the man

should not and could not work any more. Now, however, as has been the case with tuberculosis for some years, this condition is being diagnosed in the moderately advanced stages and there comes up a very nice question as to whether or not he should continue at his work with stone cutting. If he does continue at his work it is absolutely certain that it will kill him, yet many of these men from the physical point of view are able to work. If a man comes down with tuberculosis in the incipient stages, although he is perfectly well except perhaps for a little cough and a little loss of weight, we would consider it not only foolhardy but inhuman and almost criminal to urge him to keep at his work. I personally believe that exactly the same thing holds true in the moderately advanced cases of pneumoconiosis and I cannot see my way clear to advise these men to continue working and I do claim and shall continue to claim that they are partially disabled at least and certainly should not continue at their work. I therefore would still maintain my position that the moderately advanced cases of pneumoconiosis are partially disabled and should certainly not be encouraged or allowed to continue at work which is bound to kill them sooner or later.

Very truly yours,

JOHN B. HAWES, 2D.

SPECIALIST'S FEES

Editor, the *New England Journal of Medicine:*

Dear Sir:

There was a time when there were more general practitioners than at present and the physicians in the community established a fee table to which they were supposed to adhere. This fee table was often displayed in a conspicuous place in the waiting room or the office. In those days, specialists were comparatively few; now, they are many, but there seems to be no standard of fees among them, and perhaps it is impossible to have one, for each specialist works on an individualistic plan and estimates his ability, skill and experience differently. The reputation of specialists also greatly differs. It is unfortunate that there is not some standard of fees, so that the layman who consults or is referred to the specialist by his doctor may have some idea of what he is to be charged for the consultation. He could then determine whether he could afford to seek it.

The practice of medicine is a profession and not a business, we say; but so long as we take pay for our services, there is a business side to it. We have something to sell, and the buyer, naturally, wants to know how much it costs before he buys. Most specialists, I suppose, have a maximum fee and many, doubtless, have a sliding scale according to the financial condition of the consultee, if they know it. Some specialists set apart a day or certain hours in which they will see patients of limited income at much reduced rates. Not infrequently the would-be consultee inquires beforehand what the fee will be, and if he finds it beyond his means, may ask for a reduction, which, I fancy, most consultants would willingly grant. Often the consultee is diffident about asking for a reduction, and the specialist is in ignorance of his pecuniary condition, for, had he known, he would have willingly reduced his fee.

Again, specialists place different values upon their services, as do the laymen. One rates himself higher than another in his own specialty, and there seem to be some who are inclined to charge all the "traffic will bear", irrespective of the circumstances of the consultee.

This whole subject of specialist's fees seems to be in a more or less chaotic condition; but it does seem as if some sort of standardization of fees could be instituted whereby the layman could have a more definite idea of what he will have to pay for a consultation by a specialist.

The family physician, in referring a patient to the specialist, can doubtless often secure a reduction in the fee, if desired, by mentioning the fact of his patient's limited means in his note of introduction, and the specialist will be only too glad, as a rule, to accede to such a request.

At all events, there is a feeling today among many laymen that specialists' fees are in many cases too high for the service rendered, and, as they are unable to estimate the varying abilities and experience of the specialists, they class all alike. Specialties differ in the amount of equipment and the time consumed in the consultation, and, consequently, the laymen think the fees should differ accordingly.

There is another side. Some consultees will take advantage of the consultant's willingness to suit the fee to the condition of the patient's income, and plead poverty when they are quite able to pay the full fee. All high-minded specialists, I am sure, are willing to be considerate in their charges if the facts in the case are brought to their attention in a frank and truthful way.

Moreover, the layman does not always realize the long, arduous and expensive training the specialist has undergone to become a true specialist, and that the opinion the specialist may render in a few minutes may have cost him years of hard work and experience.

Somehow, if there could be a clear conception, both on the part of the specialist and on the part of the patient, as to the value of the service rendered, and the honorarium therefor, much of the criticism of the fees of specialists would, I believe, disappear. For after all, high-grade medical service cannot be estimated in dollars and cents.

EDWARD O. OTIS, M.D.

AN OPPORTUNITY TO HELP

Editor of the *New England Journal of Medicine.*

Dear Sir:

It has occurred to me that some of your readers who were students of medicine in Vienna in the old days might be interested in hearing that Dr. H. C. Kiehaupt (who very likely taught them German) is still alive, having battled successfully with the

hardships of poverty and disease. He still lives with his wife at Tigergasse 38/16, Wien VIII. He has, however, lost his means of support, his students having become so few that they can no longer be counted on, and his deafness making it extremely difficult to add to his scanty clientèle. A few of his old friends here in America are keeping in touch with him, and the undersigned can assure your readers that any little gift sent to Dr. Kiehaupt directly would be much appreciated. He does not know, it is needless to add, of this effort that is being made to help him.

Miss Lily Bugbird of the Friends Center, Singerstrasse 16, Wien I, Austria, still has a number of old middle class people who were reduced to helplessness through the War and whom she visits. She will gladly undertake to see that any money for Dr. Kiehaupt reaches its destination, should his friends prefer to make use of her services.

Sincerely yours,

FRANCIS FISHER KANE.

OCULISTS AND OPTOMETRISTS

The *New England Journal of Medicine*,
Boston, Massachusetts.

Gentlemen:

There seems to be too much confusion and false propaganda in the public mind in this state concerning the meaning of such words as "oculist" and "optometrist". The reason is that the title of "doctor" is indiscriminately employed by optometrists regardless of their training or ability.

There is little difference today financially which class of doctors one employs to care for his eyes, but scientifically there is a vast amount of difference which the public ought to know.

An oculist is a doctor of medicine, an "M.D." who studied medicine as any regular physician would, and subsequently made a special study of diseases of the eye, which required approximately eight to ten years of college and hospital training. He is an ophthalmic physician, skilled both in medicine and surgery.

The other class of so-called eye doctors are men legislated into the profession with absolutely no training in medicine, pathology or diseases of the eye, and obviously no hospital experience.

The degree of "doctor" is the highest any institution of learning can confer; hence it is strictly guarded by law in every country in the world except Massachusetts, especially when it is employed to delude the public.

Has the General Court of Massachusetts granted the right to use the title of "doctor" in connection with the word optometrist? If not, will they please explain where they get the authority to use the title of 'doctor" without the study of medicine or diseases of the eye?

There is also a false propaganda regarding the use of "drops" for examination of the eyes. The oculist today is confronted with a condition in which he is obliged to let patients go untreated because of the fear that "drops" will injure their eyes. Mydriatics or "drops" are as necessary to the eye physician as an anesthetic is to the surgeon. Upon it he depends absolutely for the diagnosis of the ailments of the eye and also to determine the amount of correction in prescribing of glasses, otherwise it is nothing but guess work.

Who are those optometrists, or so-called doctors who tell their patients that "drops" are harmful to the eyes? This is really an attack upon the public health, upon the integrity and intelligence of the medical profession, the very principles upon which our profession stands.

Respectfully submitted,

HECTOR J. MACLEAN.

December 26, 1930.

EDITOR'S NOTE:

Three terms continue to cause confusion among our lay brethren. An oculist, or ophthalomologist, is one skilled in the diseases of the eye; a physician. An optician is one skilled in optics; one who makes or sells optical instruments. He is a craftsman and one trained to fill the prescriptions of the oculist. The optometrist measures the refractive power of the eye and fits glasses to the individual to correct refractive errors. In this State he is licensed by the Board of Optometry to fulfill this function. He is not a physician; not an oculist or an ophthalmologist.

Knowing that many serious diseases of the eye, not remediable by the wearing of glasses, may cause refractive errors or visual disturbances, we believe that individuals suffering from such errors or disturbances should consult first the trained oculist. It is for the public good that we hold this belief. If the individual prefers to consult the optometrist, well and good, but let him know that he is not consulting a physician or any other kind of a doctor who may be expected to make the correct diagnosis in case his symptoms should be due to disease of the eye.

MAGGOTS IN THE TREATMENT OF WOUNDS, COMPLICATED FRACTURES, OSTEOMYELITIS, AND TUBERCULOUS ABSCESSES

Editor, *New England Journal of Medicine.*

Dear Sir:

William S. Baer, of Baltimore, Rechtman, of Philadelphia, and Taylor, of Coatesville, Pa., have been using maggots in the treatment of chronic osteomyelitis (and tuberculous abscesses) for a year or more.

In the *Proceedings of the Inter-State Postgraduate Medical Association of North America* (October 1929) 5:370, 1930 (Milwaukee), Baer reports twenty-one successfully treated cases of osteomyelitis by means of maggots. He states that "after mulling the matter over in his mind for ten years, since he was in France and saw two soldiers seriously wounded and untreated and unfed for seven days recover because their wounds were filled with maggots". The maggot treatment was used during the Napoleonic

Wars by the great military surgeon, Baron D. J. Larrey, one hundred years ago.

In the *New England Journal of Medicine*, December 18, 1930 (203:1271, 1930) there was published a report of the meeting of the R. C. R. C. Club at the Harvard Club, December 9, 1930 (by Harvey P. Towle, Secretary) and of Dr. Baer's paper on "The Treatment of Osteomyelitis and Tuberculous Abscesses by Means of Maggots of the Blue or Green Bottle Flies."

The following references will be of interest in this connection:

1. Larrey, D. J.—Clinique Chirurgicale. Tome 1, pp. 51-52, (Paris, Gabon), Nov. 1829.
2. Malgaigne, J. F.—Treatise on Fractures and Luxations. Tome 1, p. 271 (line 22), 1847 (Paris).
3. Packard, J. H.—Trans. of A Treatise on Fractures (Malgaigne's), p. 221, 1859. (Lippincott, Phila.) At the bottom of the page—"Larrey considered *maggots* an advantage—since they ate away the dead parts, and hastened the cleansing of the wound; and he *only* renewed the dressings if they became *too* numerous, their number only being the source of trouble."

HYMAN I. GOLDSTEIN, M.D.

Camden, New Jersey.
December 30, 1930.

RECENT DEATHS

BLAISDELL—DR. GEORGE WARREN BLAISDELL, for 48 years a practitioner of Manchester, Massachusetts, and a physician to its board of health, died in that town, January 5, 1931, at the age of 74.

The son of John H. and Nancy Gregg Blaisdell he was born in South Hampton, New Hampshire, March 14, 1856. In 1878 he received the degree of A.B. from Dartmouth College and in 1883 the degree of A.M., meanwhile having taken the M.D. from the Long Island College Hospital, Brooklyn in 1881. He settled in practice in Manchester in 1882, joined the Massachusetts Medical Society and the following year married Mary Ellen Lee, of Manchester. Dr. Blaisdell held membership in the Pilgrim Fathers, I. O. O. F., in the Masons and the Manchester Club besides being a Fellow of the Massachusetts Medical Society and the American Medical Association. He will be mourned by a large circle of patients and friends.

DEVENNY—DR. JOSEPH HENRY DEVENNY, obstetrician, of Dorchester, died at his home there, January 8, 1931, at the age of 56.

A native of Brooklyn, N. Y., he was a graduate of the Long Island College Hospital in 1895. Going abroad he spent much time in medical study and in the World War was a medical director in southern camps. He held membership in the Massachusetts Medical Society, in the Charitable Irish Society and the Knights of Columbus.

He is survived by his widow, one son, the Rev. Austin Devenny, S.J., and a daughter.

YOUNG—DR. JOHN FRANCIS YOUNG, a Fellow of the Massachusetts Medical Society since 1882, died at his home in Belmont, December 25, 1930.

He went abroad for study before entering Harvard Medical School where he received his M.D. in the Class of 1879. After serving as surgical house officer at the Boston City Hospital he settled in practice in South Boston. From 1885 to 1896 Dr. Young was a trustee of the City Hospital. Of late years he had lived in Belmont and with his wife, who was Miss Caroline Blake of Dorchester, had traveled extensively. He is survived by his widow and one daughter.

NOTICES

RADIO MESSAGES

Courtesy WBZA

SPONSORED BY THE STATE DEPARTMENT OF PUBLIC HEALTH

Every Wednesday at 5.20 P. M.

Program ending February 25, 1931.

January 21—"Ultraviolet Light", Dr. J. W. M. Bunker.

January 28—"Colds", Dr. Wilson G. Smillie.

February 4—"Infantile Paralysis", Dr. William Aycock.

February 11—"Heart Disease", Dr. Richard Cabot.

February 18—"Age and Cancer", Dr. Shields Warren.

February 25—"The Laboratory in Medicine and Surgery", Dr. William A. Hinton.

The Department of Public Health will tell the radio audience about its various activities every Friday—12:30 to 12:40 P. M.

"Health Forum"

Directed by the State Department of Public Health. Courtesy WEEI every Friday at 4:50 P. M. Queries and Answers will be broadcast.

Questions on health and prevention of disease may be sent to:—"Forum", State Department of Public Health, State House, Boston, Mass.

DR. DWIGHT O'HARA HAS OPENED AN OFFICE IN BOSTON

On January 1 Dr. Dwight O'Hara opened an office at 520 Commonwealth Avenue, Boston, Mass.

MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 P. M., on Thursday, January 22, in the Amphitheatre of the Peter Bent Brigham Hospital, a medical clinic will be given by Dr. Henry A. Christian, to which physicians are cordially invited. These clinics will be held regularly on Thursday afternoons.

THE NEW ENGLAND SOCIETY OF PSYCHIATRY

The New England Society of Psychiatry has wished to promote and foster sound and original research in psychiatry, especially among the younger workers in this field. To this end, instead of offering prizes, as heretofore, to be competed for, it now plans to reward for its excellence work already done.

In the Spring of 1930 the Society therefore voted to make each Spring (subject to certain restrictions contained in a committee report on the subject and summarized below), two Awards, one of $100.00 and one of $50.00, "to the writer (or writers) of the best papers, published during the previous calendar year by a younger worker (or workers), embodying research in psychiatry".

It is not the general intention to make awards to seasoned writers, to senior physicians, or to heads of research departments in which there are junior members, though they are not inevitably excluded. But no one who has once received an Award will again be eligible.

Persons not members of the Society will be eligible, but preferably their work should have been done in New England.

The foregoing restrictions are tentative. The criteria of eligibility are elastic, and much will necessarily be left to the judgment of the reviewing committees.

Papers will be examined by a committee of three members who are accustomed to reviewing papers and by the Executive Committee of the Society. They will be judged on the basis of their scientific quality.

Members of the Society or other research workers in the field of psychiatry (including psychologists, social workers, and others) who have published papers embodying such research during the past calendar year are requested to send reprints of such articles, marked copies of the journals in which they appeared, or full reference to title, journal, etc., to the Secretary of the Society before February 1, 1931.

The Superintendent of each public or private institution caring for mental patients is requested to send to the Secretary before February 1 a list of all papers published by members of his staff during the past calendar year, which he thinks entitled to be considered for the Award.

HARLAN L. PAINE, M.D., *Secretary-Treasurer*,
New England Society of Psychiatry.
P. O. Box Z, North Grafton, Massachusetts.

WHITE HOUSE CONFERENCE COURSE IN HOME ECONOMICS TRAINING

The findings of the recent White House Conference on Child Health and Protection, Section on Family Life, places emphasis on child care and training as an important aspect in the home economics field of the secondary schools. The Massachusetts Tuberculosis League and its affiliated organizations in promoting school health work throughout the past twelve years has long felt that more emphasis should be placed on preparation for health training of the child in the home. Therefore, at the request of the Educational Department of the League, the following Saturday morning course (11:00 to 1:00) is to be given the second semester at Boston University, School of Education under the direction of Mrs. Gladys Beckett Jones, Head of the Institute of Home making:—

I. Place of the Child in the Family Group:
   Cheney C. Jones, Supt. of N. E. Home for Little Wanderers.
II. Physical Development of the Child: ,
   Dr. M. Luise Diez, Director, Division of Child Hygiene, State Department of Public Health;
   Dr. Fredrika Moore, Pediatrician, Division of Child Hygiene, State Department of Public Health.
III. Mental and Emotional Development of the Child:
   Dr. Julia Deming, Psychiatrist, N. E. Home for Little Wanderers;
   Dr. Rose S. Hardwick, Psychologist, State Division of Mental Hygiene.
IV. Environment of the Child:
   Clothing for the Child,
   Miss Alice Haley, Garland School of Homemaking.
   Food for the Child,
   Dr. Alice F. Blood, Simmons College.
   Recreation for the Child,
   Miss Margery Slaght, Garland School of Homemaking.
   Reading for the Child,
   Miss Bertha Mahoney, Boys and Girls Book Shop, Boston.

The above course has the hearty approval of the New England Home Economics Association, the Director of Home Economics of the State Department of Education, and the Division of Child Hygiene of the State Department of Public Health.

UNITED STATES CIVIL SERVICE EXAMINATION

The United States Civil Service Commission announces the following open competitive examination:

Associate Medical Officer (Female)

Applications for associate medical officer (female) will be rated as received by the United States Civil Service Commission at Washington, D. C., until January 28, 1931.

This examination is to fill a vacancy in the position of Acting Assistant Surgeon (female) in the Public Health Service, Washington, D. C., at the entrance salary of $3,200 a year.

Competitors will not be required to report for examination at any place, but will be rated on their education and training, and on their experience.

Applicants must have been graduated with the degree of M.D. from a medical school of recognized standing, and, in addition, must have had at least one year of service in a modern and well-equipped

hospital with a daily average of not less than 40 patients, and one year of experience in the practice of medicine during the last five years. A knowledge of the German, French, Spanish, and Italian languages is also required.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

REPORTS AND NOTICES OF MEETINGS

NEW ENGLAND WOMEN'S MEDICAL SOCIETY

The fifty-third annual meeting of the New England Women's Medical Society was held at the College Club, 40 Commonwealth Avenue, Boston, on Wednesday, January 14, 1931, with a dinner at 6:30 P. M.

Mrs. Emma S. Tousant, Counselor for the Industrial Accident Board, spoke on "The Relationship between the Industrial Accident Board and the Medical Profession."

WACHUSETT MEDICAL IMPROVEMENT SOCIETY

The last regular meeting of the Wachusett Medical Improvement Society with the Webster Medical Society as guests was held at the Holden Hospital on Wednesday, January 7, 1931.

Dr. G. Arnold Rice of the Holden Clinic gave a most interesting paper on "Bronchoscopy." He bronchoscoped a patient, which demonstration proved very instructive. Dr. Rice had recently returned from the Jackson Clinic.

Supper was served at the Holden Trowel Club in Holden and a large representative group from the Webster Medical Society was present.

WILLIAM T. KNOWLTON, *Secretary and Treasurer.*

BOSTON MEDICAL LIBRARY

ANNUAL MEETING

The Annual Meeting of the Library will be held on Tuesday evening, January 20, at the Library, 8 The Fenway, at 8:15 o'clock.

Following the business meeting Dr. David Cheever will give a talk entitled "A Group of New England Surgeons."

Light refreshments after the meeting.

HORACE BINNEY, *Secretary.*

BOSTON MEDICAL HISTORY CLUB

Sprague Hall, 8 The Fenway

Monday, January 19 at 8:15 P. M.

"The Principles Underlying Chinese Medical Practices." Dr. W. R. Morse, West China Union University.

"Isaac Judaeus and his Times." Dr. Hyman Morrison.

Exhibition of Chinese Medical Classics.

Light refreshments after the meeting.

JAMES F. BALLARD, *Secretary.*

AMERICAN HEART ASSOCIATION, INC.

The Annual Meeting of the American Heart Association will be held on Monday, February 2, 1931, at the Academy of Medicine, Fifth Avenue and 103d Street, New York, N. Y.

I. C. RIGGIN, M.D., *Executive Secretary.*

NEW ENGLAND PHYSICAL THERAPY SOCIETY

The next regular meeting of the Society will be held at the Square and Compass Club, 448 Beacon Street, Boston, on Wednesday evening, January 21, 1931, at 8:15 P. M.

There will be a symposium on:—

High Frequency Currents

1. The Physics of High Frequency Currents—Mr. Paul V. Barker.
2. Therapeutics of the Oudin Current—Dr. Franklin P. Lowry.
3. Diathermy, Direct and Indirect—Dr. Louis Feldman.
4. Diathermy in Gynaecology—Dr. DeWitt G. Wilcox.
5. Autocondensation and Saturation—Dr. John F. Sutherland.

Papers limited to 15 minutes, discussion to 5 minutes.

Council Meeting at 6 P. M.

Dinner at 6:30 P. M.—$1.25. Bring a medical friend.

All medical men are cordially invited.

ARTHUR H. RING, M.D., *Secretary.*

HAMPDEN DISTRICT MEDICAL SOCIETY

The regular Winter Meeting of the Society will be held in the rooms of the Springfield Academy of Medicine on Tuesday, January 27, at 4.15 P. M. Paper for the afternoon: "Some of the Vagaries of Pediatricians," Dr. John L. Morse of Boston.

Discussion by Fellows.

Dinner at 6 P. M. at expense of Society.

The annual assessments are now due.

HERVEY L. SMITH, *Secretary and Treasurer.*
249 Union Street, Springfield, Mass.

SOCIETY MEETINGS
CONGRESSES AND CONFERENCES

January 16—The New England Roentgen Ray Society. See page 93, issue of January 8.

January 18-March 29—Harvard Medical School. Free Public Lectures. See page 1312, issue of December 25.

January 19—Boston Medical History Club. See details elsewhere on this page.

January 20—Boston Medical Library. See details elsewhere on this page.

January 20—South End Medical Club. See page 93, issue of January 8.

January 21—New England Physical Therapy Society. See notice above.

January 22—Medical Clinic at the Peter Bent Brigham Hospital. See page 137.

January 22—Conference on Mental Hygiene in Industry. See details on page 1316, issue of December 25.

January 23-April 7—Worcester State Hospital, Hospital Staff Luncheons. See page 93, issue of January 8.

February 2—American Heart Association, Inc. See details above.

February 2-March 30—Lectures on Keeping Mentally Fit. Given under the auspices of the Massachusetts Divi-

sion of University Extension and the Massachusetts Society for Mental Hygiene. Boston.

Eight lectures, in the Gardner Auditorium, State House, Boston, Monday evenings, beginning February 2, 1931.

Course Leader: Dr. Henry B. Elkind, Medical Director, Massachusetts Society for Mental Hygiene.

February 2—Keeping Mentally Fit: A New Art and Need of the Times. Joseph Jastrow, Ph.D., Formerly Professor of Psychology, University of Wisconsin.

February 9—The Child Is Father to the Man. James S. Plant, M.D., Director, Essex County Juvenile Clinic, Newark, N. J.

February 16—Fatigue, Worry, and "The Blues." Karl M. Bowman, M.D., Assistant Professor of Psychiatry, Harvard Medical School.

March 2—Do We Americans Really Live? James J. Walsh, M.D., Medical Director, Fordham University School of Sociology, and Professor of Physiological Psychology, Cathedral College, New York City.

March 9—The Job and Mental Health. Elton Mayo, Harvard Graduate School of Business Administration.

March 16—Emotion and Intellect in Adult Life. William B. Terhune, M.D., Austen Riggs Foundation, Stockbridge.

March 23—Normal and Abnormal Fear. Abraham Myerson, M.D., Professor of Neurology, Tufts College Medical School.

March 30—"Nerves"; Their Meaning in Our Lives. E. Van Norman Emery, M.D., Medical Director, Connecticut Society for Mental Hygiene.

February 4-June 3—Cardiac Course. See page 854, issue of October 23, 1930.

March 23-27—Fifteenth annual clinical session of the American College of Physicians. Detailed notice appears on page 790, issue of April 17.

May 11-14—Meeting of the National Tuberculosis Association at Syracuse. See page 1310, issue of December 25.

July 27-31—Third International Congress of Radiology, Paris. Complete notice appears on page 385, issue of August 21.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

April 16—Taunton Woman's Club.

September 17, 1931.

Essex South District Medical Society

Wednesday, February 4—Council meeting, Boston.

Wednesday, February 11—Danvers State Hospital. Clinic at 5 P. M. Dinner 7 P. M. Speaker: Dr. Bryant E. Moulton, Assistant Director of the Judge Baker Foundation. Subject: "Juvenile Delinquency."

Wednesday, March 4—Lynn Hospital. Clinic at 5 P. M. Dinner at 7 P. M. Speakers: Dr. Henry H. Faxon, Boston; subject: Treatment of Varicose Veins and Ulcers by the Injection Method. Dr. Arthur W. Allen, Boston; subject: Neuro Vascular Surgery.

Thursday, May 7—Censors meet at Salem Hospital at 3:30 P. M.

Tuesday, May 12—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. Morris Fishbein, Editor of the A. M. A. Journal of Chicago. Subject: "History of Medical Cults." Ladies invited.

Franklin District Medical Society

March-May, 1931—The meetings are held on the second Tuesdays of March and May at 11 A. M. at the Weldon Hotel, Greenfield.

Hampden District Medical Society

January 27—See detailed notice on page 139.

Middlesex East District Medical Society

January 21—See notice on page 1316, issue of December 25.

March 11—At Reading.

May 13—At Wakefield.

Norfolk District Medical Society

January 27—Dr. W. E. Ladd. Subject to the announced. Children's Hospital, 8 P. M.

February 24—Dr. F. C. Irving and Staff, "Difficult Labor Cases and Indications for Interference." Boston Lying-in Hospital, 8 P. M.

March 31—Dr. Arthur W. Allen. Subject to be announced (will deal with circulatory diseases). Hotel Kenmore, 8 P. M.

May—Annual Meeting. Date and details to be announced.

May 7—Censors' Meeting for examination of candidates at 171 Warren Street, Roxbury, 4 P. M. Candidates for schools on accepted list will forward application with certificate of graduation to the secretary at least one week prior to date of examination. Candidates from schools not on accepted list who have been in practice five years will forward applications together with five letters of recommendation from members in good standing in the Massachusetts Medical Society to Dr. P. P. Johnson, Cabot Street, Beverly, Mass., two weeks prior to date of examination. Fee for all candidates $10.00.

FRANK S. CRUICKSHANK, Secretary.

Norfolk South District Medical Society

The meetings for the ensuing year are as follows: February 5, March 5, April 2, May 7.

All meetings begin at 12 noon. The February meeting will be held at the Quincy City Hospital. All other meetings will be held at the Norfolk County Hospital, South Braintree.

The censors will meet on May 7 at 11:30 A. M. at the Norfolk County Hospital, South Braintree.

NATHAN R. PILLSBURY, Secretary.

Suffolk District Medical Society

January 28-April 29—Combined meetings with the Boston Medical Library. These meetings will be held as specified below on Wednesdays, at 8:15 P. M.

January 28—General meeting in association with the Boston Medical Library at the Boston Medical Library. "The Practice of Medicine in Relation to Public Health Activities." See page 93, issue of January 8.

February 25—Clinical Program, Boston City Hospital.

March 25—Clinical Program, Beth Israel Hospital.

April 29—Annual Meeting. Election of Officers. Boston Medical Library.

The medical profession is cordially invited to attend all of these meetings.

GEORGE S. DERBY, M.D.,
President, Suffolk District Medical Society.

LELAND S. McKITTRICK, M.D.,
Secretary, Suffolk District Medical Society.

HILBERT F. DAY, M.D.,
Boston Medical Library.

BOOK REVIEWS

Riders of the Plagues—a story of the conquest of disease. By JAMES A. TOBEY. Charles Scribner's Sons, 1930. Price $3.50.

Lately the public has been offered a variety of books describing in a more or less popular way the histories of pestilences, of medicine and of the development of sanitation and disease prevention. Some of these books, such as Haggard's "Devils, Drugs and Doctors", and Wade Oliver's all-too-brief "Stalkers of Pestilence" have been admirable and have done much to give the public a true appreciation of the amazing and noble achievements of preventive medicine. In the present volume the author has chosen his material well and has made it into a book that gives the reader a close acquaintance with the pestilential diseases that once plagued us, and of the measures that man, through his scientific knowledge, has taken to rid us of these pestilences, to safeguard our health and to prolong our lives. Some of the chapters, such as "The Conquest of Yellow Fever" and "Trudeau and Tuberculosis" are stirring in the story that they tell, but they, and as a matter of fact the whole book, are marred by errors, which the author should be the last one to commit. The book as a whole is so readable and so full of interesting matter that we hesitate to give it any severe criticism, but because of its general excellence we regret all the more that the author allowed himself to be careless. Here and there we find a misspelled name and an incorrect date, but we can overlook these faults as well as the use of "media" for the singular "medium", but we cannot forgive him for calling our beloved "Popsy" Welch, "Daddy" Welch.

The author, like so many other writers in the field of public health, has two faults which seriously de-

tract from his style. He likes catch-phrases, and he feels that in order to excite and hold the interest of his readers he must write "popular" English. The frequent use of such titles as "The Lady With a Lamp" for Florence Nightingale and that hackneyed "The Captain of the Men of Death" for tuberculosis are straight from the "Public Healther's" phrase book and might better have been left there. But our main criticism is directed against the author's English. There is little excuse for the bad grammar and the inelegant expressions that abound in these three hundred and thirty-eight pages. The public may prefer "popular" English, but as we recall the popularity of Huxley's lay lectures, for example, we very much doubt it. We are confident that the average reader prefers dignified and graceful writing to the English of Hollywood or of the streets. We are genuinely sorry that the author with such excellent and impressive stories to tell and with the ability to tell them well could not have told them in a less common way. The twenty-one heroes and many other men and women of all nations who have been and are the riders of the plagues deserve more refined treatment.

Text-Book of Medicine. (Second Edition.) Edited by RUSSELL L. CECIL, and Associate Editor for Diseases of the Nervous System, FOSTER KENNEDY. 1592 Pages. Philadelphia and London: W. B. Saunders Co., 1930. Cloth, $9.00.

This textbook by a large number of authors presents more uniformity than might be expected in such a compilation, and is a tribute to the work of the two editors. A high standard of excellence is maintained in various articles which the reviewer has been able to read. The material is tersely but adequately presented, and I was unable to discover any omissions.

Comparison with the original volume of Osler's text, for so many years the standard, comes to mind almost immediately, and certainly the present volume is a worthy successor in the same field.

Legal Medicine and Toxicology. By RALPH W. WEBSTER, M.D., PH.D. W. B. Saunders Company. Phila. 1930. Pp. 861. Price $8.50.

Dr. Webster's wide experience in medical jurisprudence and toxicology well qualifies him for the preparation of such a volume. The material is presented in much more compact form than in any other of the available works on the subject, and owing to the growing importance of legal medicine this volume represents an important contribution to medical literature. Of particular interest to the practicing physician who only occasionally comes in contact with medico-legal procedures, the introduction with its discussion of legal procedure and its definition of ordinary and expert witnesses will be of decided value. Of equal importance are the first two chapters on the legal rights and obligations of the physician and on malpractice.

In the section on toxicology adequate consideration is given to the various gases and industrial hazards, as well as the poisons more commonly considered.

Annals of Roentgenology—Vol. XII. *The Chest in Children.* By E. GORDON STOLOFF, M.D. Paul B. Hoeber, Inc. New York. 432 Pages. Price $15.00.

This volume by E. Gordon Stoloff is the twelfth in the series of *Annals of Roentgenology.* It contains four hundred and thirty-two (432) pages, divided into twenty-eight (28) chapters, and there are four hundred and one (401) illustrations. The illustrations, as in the previous volumes, are unusually good. The text is quite complete. In addition to the usual description of the roentgenological appearance of the various pathological processes the author has devoted considerable space to a discussion of the distortion of shadows produced by x-ray, and to other factors connected with technique. The chapter on tuberculosis in children is especially good. The recent work on the diagnosis of intrathoracic lesions in children, such as persistent thymus and retropharyngeal abscess, is included.

The subject is presented conservatively and completely. The book should be a definite aid, both to clinicians and roentgenologists in the diagnosis of diseases of the chest in children.

Illustrated Primer on Fractures, Prepared by The Coöperative Committee on Fractures of the American Medical Association. Published by The American Medical Association, 535 North Dearborn Street, Chicago. Price $1.00.

For several years The Coöperative Committee on Fractures, composed of Dr. Nathaniel Allison, Dr. William Darrach and Dr. Kellogg Speed, has staged perhaps the most instructive and spectacular of the exhibits held in connection with the annual meetings of the American Medical Association. It has enlisted the services of about 150 surgeons experienced in the treatment of fractures and with their help has given continuous demonstrations on living subjects of the approved apparatus and the efficient methods of reduction employed in the treatment of all the common fractures.

The Primer is a pictorial review of one of these exhibits. The line drawings of the different booths with "fracture slogans" on the walls and the essential features of the different apparatus and the methods illustrated are supplemented by short legendary texts of a most practical nature. Blank space for notes has been included and on the last of the 55 pages are printed lists of splints and material for the doctor's automobile and for the doctor's office.

The volume is really what its title implies, a Primer on Fractures, but not by any means too primary for the general practitioner or the "industrial" surgeon. It is a most useful and graphic handbook and one badly needed. We congratulate The Coöperative Committee on Fractures upon making an original and valuable contribution to a branch of surgery that especially needs such help.

Physiological Principles in Treatment. By W. Langdon Brown with collaboration of R. Hilton. Wm. Wood & Co., N. Y. Price $3.75.

This is the sixth edition of this little book, which first appeared in 1908. It remains a valuable booklet on the general principles of the treatment of the disease. It really makes a companion volume to other books on pathological physiology, only in this case the emphasis is on measures tending to correct the disordered function.

It is the opinion of the reviewer, that this type of book should be further extended, as it is the only rational way to approach the problem of therapy. Dr. Brown has done this as satisfactorily as possible within the scope of this volume. It is readable and while, in some cases, the regimens are different from those generally employed in this country, this is an advantage rather than otherwise.

One can unhesitatingly recommend this book.

Practical Midwifery For Nurses. By Bethel Solomons, M.D., F.R.C.P.I., M.R.I.A. Humphrey Milford, Oxford University Press, New York. 365 pages, with 136 illustrations and frontispiece. Cloth $2.75.

Dr. Solomons, in an interesting, readable form, gives the details of nursing care as practised at the Rotunda Hospital in Dublin. It is quite evident that it is their desire in Ireland to teach nurses much more than many of us here in the United States think judicious. The responsibilities which the nurses, many of whom are trained midwives, take in Ireland is much greater than those which the nurses here are ever allowed to assume. Many of the phrases used would never be understood by the nurses in this country, and there is no reason why we should attempt to adopt them. The technique that is advised in many of the procedures is not according to our teaching.

Although the book is interesting and will be very useful for medical students, it will not have great usefulness for the nurses of this country.

Biographical Sketches and Letters of T. Mitchell Prudden, M.D. New Haven: Yale University Press, 1927. x + 311 pages.

Dr. Prudden was one of the pioneer pathologists and bacteriologists in this country. Born in 1849, in Connecticut, the son of a minister, he was graduated from Sheffield Scientific School, Yale University, in 1872 and later from the Yale Medical School. He then went to New York and met Dr. Francis Delafield, at the Roosevelt Hospital. Delafield started him on his work in pathology. In 1876 he went abroad, worked with Arnold in Heidelberg, and came home to take up his work with Dr. Delafield again. Although he tried for a few years to practise medicine in New Haven, he soon returned to pathology and from 1878 on, he did nothing else. He and Dr. William H. Welch were contemporaries; Prudden at the Roosevelt Hospital, Welch at the Bellevue Hospital. In 1885 he issued, with Francis Delafield, "A Handbook of Pathological Anatomy and Histology," this being practically a second, but enlarged, edition of Delafield's work on the same subject published in 1872. This book became a standard in its field and is still considered as one of the best textbooks on pathology, the 14th edition having appeared in 1927. In addition to this book, Prudden also wrote "A Manual of Practical Normal Histology," the first edition in 1881. This book also was successful and went into a number of editions. In later life Dr. Prudden became a member of the Board of the Rockefeller Institute and of the International Health Board of the Rockefeller Foundation. He retired as professor of Pathology at Columbia University in 1909.

This life of Dr. Prudden contains many letters from him to the leading medical men of his time, as well as interesting glimpses of the non-professional side of his life. He often took his vacations in the West and he made a study of the Cliff-Dwellers. Some of his models of their houses are now in the American Museum of Natural History, New York. Although he made no distinct contribution to pathology, his influence was great as a teacher and because of his excellent textbook.

Medicine in Virginia in the Seventeenth Century. By Wyndham B. Blanton, M.D. The William Byrd Press, Richmond, 1930. xvii + 337 pages.

The medical history of the various states of the Union is gradually being written and this book on Virginia sets an excellent standard for the type of local history which ought to be made an important contribution from every section of the country. The present work is the result of the efforts of a number of authors, all members of the Medical Society of Virginia. At a meeting of that Society, in 1926, it was decided to compile an accurate and detailed history of medicine in the state, the first volume, which is here reviewed, covering the period from 1607-1700. Subsequent volumes will cover the 18th and 19th centuries. The conditions in Virginia, from the medical point of view, in the early days have been investigated by the author in great detail and he has collected what is presumed to be practically all the material available on the subject. The book is divided into various sections, including chapters on "Medicine Under the London Company," "Housing the Sick," "The Private Life of Physicians," "Medical Fees," "Medical Legislation," and similar subjects. References to original documents occur on every page, with an accurate notation of the source of the reference in a footnote. The chapter on "Epidemic Diseases," for instance, contains ninety-four references to the literature. Appended to the text is a brief biographical dictionary of the 17th century Virginia physicians, a bibliography of the works consulted, and a good index. The volume is well illustrated by maps and the title pages of books used by the doctors who practised in Virginia before 1700. These illustrations are largely from the Miller collection in the library of the Richmond Academy of Medicine. The author of this volume is to be congratulated on its excellence. It is an authoritative book, covering the subject completely and as a source book can be highly recommended.